Why PA?

Federal law makes each state responsible for disposal of low-level waste generated within its borders. The law provides a key incentive for development of regional facilities: states that join compacts can ban out-of-compact waste.

LOW-LEVEL WASTE GENERATION-APPALACHIAN STATES COMPACT



Source: EG&G MIMS Database

Pennsylvania joined with the states of Delaware, Maryland, and West Virginia to form the Appalachian States Compact. Between 1987 and 1992, an annual average of 169,952 cubic feet of low-level radioactive waste was generated in the Appalachian Compact states. The percentage generated by each state in the compact is shown in the map above. Pennsylvania is by far the largest generator in the compact. For this reason, Pennsylvania is the first host state in the compact and it has the lead role in providing for safe management and disposal of low-level waste generated in the four states in the compact.

There are two existing disposal facilities for commercial low-level radioactive waste in the country. The facility operated by U.S. Ecology in Hanford, Washington, is no longer available to generators in the Appalachian Compact. Chem-Nuclear's facility in Barnwell, South Carolina, currently accepts waste from the Appalachian Compact region under an access agreement. This agreement expires on June 30, 1994, and is not expected to be extended. Because Pennsylvania's facility will not be in operation until mid-1999, generators will have to store their wastes for approximately five years.

Safe Managemet

Pennsylvania's Low-Level Radioactive Waste Management and Disposal Regulations (25 PA Code Chapter 236) contain the most stringent requirements in the country and reflect citizen priorities for safety, monitoring, and fairness.

Safe disposal of low-level waste requires isolating it from the environment. Over time, radioactive decay will eliminate the radioactive hazards (see box, below right). To achieve the goal of long-term isolation, a combination of natural and man-made safeguards is required, as described below.

SITING - WHAT MAKES A SITE SAFE?

The natural features of the site must work with the disposal facility to isolate low-level waste from the environment. Pennsylvania's regulations contain technical requirements to select a suitable site. For example, a suitable site must not be located in floodplains, near water supplies, or in poorly drained areas. The site must not be susceptible to landslides or severe erosion and must not have extreme slopes. Natural resources — such as national and state parks, historic sites, oil and gas wells, and special agricultural lands — must also be avoided. DER oversees the applicant's (Chem-Nuclear's) siting activities.

Identifying a suitable site for low-level waste disposal will occur in two steps. During the first step, the applicant will analyze the entire state and recommend three sites for Environmental Quality Board approval for further detailed studies.

In order to grant approval for further studies, the Environmental Quality Board must determine that the three sites meet the regulations. The Board also must review the record and determine that the siting process identified three of the best sites The record consists of the applicant's information, public comments, public hearing testimony, and DER comments and recommendations.

The second siting step begins when the Environmental Quality Board approves the three sites for further studies. The applicant will conduct site characterization studies. These studies are expected to take a year or longer. Especially important is the collection of information that may vary with the seasons — such as weather and groundwater levels. From the three sites, the applicant will select one site as the preferred location.

The applicant's preferred site will be identified in its license application submitted to DER. The license application will undergo stringent technical evaluation and broad public review before a licensing decision is made. DER's approval of the license application will indicate that the site meets the stringent technical requirements and can isolate the waste from the environment.

DESIGNED FOR SAFETY

Pennsylvania regulations require that an abovegrade disposal facility be designed and built to keep low-level wastes isolated from people and the environment for 500 years.

The design must work with the natural features of the site. It must handle the amounts and types of low-level waste that will be disposed over a 30-year operating period. As described on pages 5 and 6, the applicant's proposed design relies on layers of reinforced concrete and an engineered earthen cover to isolate the waste. Monitoring systems are required to verify acceptable operation. The design will allow waste to be recovered in the event a problem is discovered.

DER will review the final design during the license application review process. If the license is issued, construction of the facility will take approximately one year. DER inspectors will oversee facility construction.

"This is the most open to the public program I have seen during my 48 years in state environmental affairs."

- Oliver Smith, Former Chair, DER Low-Level Waste Advisory Committee

Facts About Radioactivity and Radionuclides

An atom that emits radioactivity is called a radionuclide The unit of measure for radioactivity is the <u>curie</u>, which is a measure of the intensity of radioactivity emitted from a radionuclide.

Over time, radionuclides lose their radioactivity through the process of radioactive decay. A <u>half-life</u> is the time it takes a radionuclide to lose half its radioactivity. The half-lives of radionuclides range from fractions of a second to millions of years, but the half-life of each radionuclide is precisely known. Most of the low-level wastes disposed at Pennsylvania's facility will contain radionuclides with half-lives of less than 30 years.

The level of risk associated with low-level waste depends on the types, concentrations, toxicity, and half-lives of the radionuclides the waste contains. All these variables form the basis of the low-level waste classification system, which determines the type and level of safeguards required.



THE RADIOACTIVITY OF LOW-LEVEL RADIOACTIVE WASTE DECREASES OVER TIME



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