Million-Year Standard Set for Nuclear Waste Facility

One million years. That’s the required design life of the proposed Yucca Mountain nuclear waste repository in the Nevada desert, according to Environmental Protection Agency safety standards released in August. In a statement, EPA assistant administrator for air and radiation Jeffrey Holmstead, Ph.D., said that the radiation standards met “an unprecedented scientific challenge” to protect the public health for 25,000 generations.

But Richard Meserve, former chairman of the Nuclear Regulatory Commission, the agency responsible for implementing the safety standards, questioned their wisdom. “Events that may or may not happen hundreds of thousands of years from now are driving decisions today.”

The standards call for a peak radiation dose to a person living near the repository of 15 millirems (mrem) per year for the first 10,000 years—which the EPA statement dryly notes as a period “twice as long as all of recorded human history”—and 350 mrem per year thereafter. Natural background radiation in the Western United States is about 200 mrem per year, and a medical x-ray delivers about 10 mrem.

Doug Boreham, Ph.D., assistant professor of radiation physics and applied medical science at McMaster University, Hamilton, Ontario, called the standard “reasonable.” “Fifteen millirems can have a biological effect, but it’s small and difficult to really quantify.”

The standards also call for a design that can withstand earthquakes, volcanoes, floods, and the possible effects of global warming.

The decision to build the repository now rests with Congress, which must allocate funds for it. The Department of Energy is charged with designing, building, and operating the facility.

Nuclear waste from the nation’s 103 nuclear power plants is currently being kept in temporary facilities scattered across 39 states. Secretary of Energy Spencer Abraham has stated that 161 million Americans live within 75 miles of one of these sites, which he and others cite as a prime argument in favor of a permanent repository.

The EPA proposed the 15-mrem, 10,000-year safety standard in 2001. But last July, an appellate court ruled that those standards were not in line with a 1995 National Academies report, as required by a 1992 law (see News, Vol. 96, No. 22, p. 1656, “Federal Ruling Requires Million-Year Guarantee of Safety at Yucca Mountain Nuclear Waste Site”). The court ruling prompted these latest regulations that add the 350-mrem exposure limit after 10,000 years. Yucca Mountain was first proposed as a repository site in 1978.

—Brian Vastag

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