

and any data relating to LAMW is welcome. We are also aware of numerous generators that store, rather than dispose, LAMW because of the regulatory and economic difficulties associated with disposal. We would welcome data from a variety of generators on these matters to obtain a more accurate picture of the present issues associated with storing and disposing of LAMW. We would also welcome comment and information from the perspective of companies that operate low-level radioactive waste disposal facilities or RCRA Subtitle C hazardous waste landfills.

We realize that there are quite a number of different generators of LAMW, such as

- Industrial-manufacturing facilities
- Industrial-research and development facilities
- Other industrial facilities
- Academic institutions
- Medical facilities (hospitals and colleges)
- Medical research facilities
- Federal facilities
- Nuclear power plants and associated fuel cycle facilities

To supplement and update currently available data, we are requesting the following types of information (information with clearly labeled units is appreciated):

- *LAMW Generation, Treatment, and Disposal:* For individual waste types or categories of waste, current low-activity mixed waste generation rates and storage, treatment, and disposal practices. Data on types of mixed waste generated, RCRA codes, radionuclide concentrations, storage and treatment techniques, and disposal practices for these waste types or categories of waste, and data on waste volumes before and after treatment would be very useful and informative. In terms of waste concentrations, information that describes the amount of waste within different concentration ranges would be most useful and would assist in gauging the potential usefulness of a standard aimed at LAMW.

- *LAMW Cost Data:* The costs associated with the management of LAMW, including storage costs, costs of sampling and analysis for compliance with RCRA vs AEA requirements. This could include the costs for meeting the universal treatment standards, pre-treatment and treatment costs (by method), packaging and transport costs, disposal costs, and reporting and recordkeeping costs. To the extent the costs can be broken out for meeting RCRA vs AEA requirements, greater understanding of the regulatory burden posed by each authority would follow.

- *Impacts of Actions to Facilitate Disposal:* We also request comments regarding the potential effects of a standard to facilitate the disposal of LAMW. If such a standard were in place today, and such waste could be disposed in a RCRA Subtitle C landfill with little, or no, further NRC requirements, would such a standard enhance the conduct of your business? For example, would it free up resources that could be better directed? Would research or manufacturing activities be facilitated, knowing that a potentially more cost-effective disposal method became available for a certain kind of waste? What impacts, if any, would there be on the choice of health care options? What factors (e.g., economic, regulatory) would influence your decision to dispose of or accept LAMW for disposal under such a standard? Would limiting a standard to commercial RCRA-C facilities be an important consideration? How might this affect DOE disposal policies? How do disposal facilities view the need for a permit modification or AEA license?

J. Background Information Regarding LAMW

In 1976, RCRA authorized us to regulate hazardous waste from “cradle to grave.” This includes the minimization, generation, transportation, treatment, storage, and disposal of hazardous waste. The definition of solid waste in the RCRA legislation specifically excludes source, special nuclear, or byproduct material as defined by the AEA of 1954, as amended. In the 1984 Hazardous and Solid Waste Amendments to RCRA, Congress established land disposal restrictions (LDR) for hazardous waste and directed us to establish treatment standards for hazardous waste. Hazardous waste has been prohibited from land disposal unless treated to our established standards in 40 CFR part 268.

Mixed waste is regulated under multiple authorities: by RCRA, as implemented by us or authorized States for hazardous waste components; and by the AEA of 1954, as amended, for radiological components as implemented by either the DOE (for radioactive waste subject to DOE’s AEA authority), or the NRC or its Agreement States (for all other mixed waste). DOE is responsible for the disposal of, but does not regulate, commercial Greater-than-Class C mixed waste. Under the AEA, EPA has the authority to issue certain generally applicable environmental standards.

Low-activity mixed waste is a special class of mixed waste. It may be viewed

as waste that meets the definition of hazardous waste under RCRA and, under AEA, is LLRW containing “low” radionuclide concentrations. In this context, “low” concentrations are concentrations no higher than Class A LLRW, as defined in 10 CFR 61.55.²¹

1. Commercial LAMW

The radioactive component of mixed waste, and by extension, LAMW is regulated by either the Nuclear Regulatory Commission and the Agreement States (for commercial facilities) or the DOE (for DOE’s energy and defense related activities). Commercially-generated (i.e., non-DOE) LAMW is produced across the country, at nuclear power plants, fuel cycle facilities, pharmaceutical companies, medical and research laboratories, universities, and other facilities. Processes such as medical diagnostic testing and research, pharmaceutical and biotechnology development, and generation of nuclear power result in some mixed waste. The last comprehensive evaluation of mixed waste was published in a 1992, known as the joint EPA and NRC “National Profile on Commercially Generated Low-Level Radioactive Mixed Waste” (NUREG/CR 5938). Accordingly, 3,950 cubic meters of low-level radioactive mixed waste was generated in the United States in 1990, while another 2,120 cubic meters were in storage. Of the 3,950 cubic meters generated in 1990, about 72% were liquid scintillation counting fluids, 17% were other organics and aqueous liquids, 3% were metals, and 8% were “other” waste. Approximately 3000 small volume generators were storing mixed waste. A report published by DOE in 1995 revisited the issue of mixed waste. Using the data from the “National Profile,” this report examined the variety of options available for managing commercially-generated mixed waste and reached the following conclusions (“Mixed Waste Management Options: 1995 Update,” DOE/LLW-219):

- Most, but not all, mixed waste can be treated by commercially available technology.
- Approximately 128 cubic meters per year of commercially generated waste volumes would require disposal

²¹ Note that LLRW is defined by exclusion, that is, by what it is not. For example, the Low-Level Radioactive Waste Policy Act of 1980 defines LLRW as radioactive material that is not high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11e.(2) of the AEA (i.e., uranium or thorium mill tailings).