

DOE LDR STRATEGIES FOR RMW

Leanne W. Smith
Office of Environmental Restoration and Waste Management (EM-321)
U.S. Department of Energy
Washington, D.C. 20585

ABSTRACT

Discusses U.S. Department of Energy activities for compliance with the Resource Conservation and Recovery Act (RCRA). Includes information from two recent DOE publications that detail the quantities of various waste streams that DOE facilities generate, store, and treat. Concludes that DOE needs additional treatment facilities for its waste streams in order for its sites to be in full compliance with regulatory requirements.

INTRODUCTION

DOE's strategy for compliance with land disposal restrictions (LDR) for radioactive mixed waste (RMW or mixed waste) is to

1. identify the scope of the LDR compliance issues,
2. identify available treatment capacity,
3. build compliant treatment,
4. participate in regulatory development, and
5. comply with regulations.

Strategies for the U.S. Department of Energy's compliance with the RCRA land disposal restrictions for mixed waste are described in the September 1989 DOE Land Disposal Restriction Strategy Report for Radioactive Mixed Waste (Strategy Report), which was cooperatively prepared by DOE's Office of Environmental Guidance and Compliance and Office of Environmental Restoration and Waste Management. This report details the size of DOE's thirds mixed waste problem and addresses several strategies for compliance. DOE has also identified the magnitude of its LDR waste universe in more detail in the National Report on Prohibited Wastes and Treatment Options required by the Rocky Flats Plant FFCA. DOE's goal is to comply fully with all environmental laws and regulations.

IDENTIFY SCOPE OF LDR COMPLIANCE ISSUES

DOE is concerned with both its present compliance issues (for solvents, dioxins, and California list waste), and its future compliance with "thirds" mixed wastes. To this end, each site has identified mixed waste stream volumes generated and now stored. This was done for both the Strategy and the National reports.

For the Storage Report, DOE-HQ requested information on thirds mixed waste generation, storage and treatment. For the National Report, all DOE operations offices and sites were asked to report on the presently regulated mixed wastes that they generate or store. The report excluded hazardous wastes, radioactive wastes, and thirds wastes. DOE included waste streams that are generated or stored in States without RMW authority, because EPA and DOE expect these States to gain RMW authority soon. In

addition, it is clear that mixed wastes need treatment regardless of the regulatory status in the State where they happen to be located. Treatment capacity questions need to address the universe of mixed (and other) wastes, not just the wastes that are now out of compliance with RCRA. However, the National Report only includes information about the RCRA compliance status of the waste streams, not the State regulatory authority.

DOE sites range in size from research laboratories with nominal amounts of mixed waste to major weapons production complexes with large amounts of mixed waste stored from several decades of operation. Most DOE sites are located in States where mixed wastes are not yet regulated as hazardous wastes under the federal RCRA program, although DOE's sites with large volumes of waste are regulated by states with mixed waste authority. Georgia is the only state with HSWA authority for land disposal restrictions.

Most of the RMW storage areas are in compliance with RCRA interim status requirements pending issuance of a final permit, or are being upgraded to meet RCRA interim status requirements in agreement with schedules negotiated with appropriate regulatory agencies. Certain other RMW storage areas are not required to have a RCRA permit. These are either satellite accumulation areas or are located in States that have the base RCRA program authority but have not yet received RMW authority.

The Strategy Report includes storage and generation of thirds RMW. Although not yet subject to the RCRA storage limitations, DOE still needs to consider them in evaluating treatment capacity requirements to comply with future disposal restrictions. Of the 352,000 cubic meters of waste that are now stored, over 285,000 cubic meters (81%) were placed in storage before EPA's LDR effective date or are located in States where RMW is not yet regulated. The National Report indicates that 31 DOE sites generate or store close to 250 RMW streams that contain solvents, dioxins and California list wastes. Roughly 94,000 cubic meters of such wastes are generated annually, and 352,000

cubic meters are now being stored. These figures include waste placed in storage before the LDR effective date.

Except for the underground singly encased tanks at three of our sites, the integrity of storage vessels holding RMW is good. Very few documented releases have occurred, and these typically resulted from mishandling or overfills. Where releases have occurred, efforts were made to contain and remove the released waste and reduce the chance of future leaks. There have been no instances of public exposure to these releases.

IDENTIFY AVAILABLE TREATMENT

The DOE complex has a present annual incineration capacity of only about 1200 cubic meters of wastes, and other treatment capacity of 15,000 cubic meters (i.e., 15,000 cubic meters of pretreatment followed by 15,000 cubic meters of compliant treatment).

Treatment differs among HLW, LLW, and TRU and further differs depending on the activity of the waste in these categories. Remote handled and contact handled wastes must be treated differently. RCRA compliant treatment differs according to the hazardous constituents in the waste stream (e.g., mercury is treated differently than solvents).

Statutes and regulations under which DOE facilities operate (AEA, DOE Orders) require specific disposal methods for radioactive wastes. Thus, high-level waste (HLW) can only be disposed in a geologic repository. DOE plans to process HLW to a stable waste form (e.g., borosilicate glass or ceramic), place it in stainless steel canisters, and dispose of the canisters in a deep geological repository. The location of the repository has yet to be decided, but Congress has limited the evaluation of any site to the Yucca Mountain, NV site.

DOE is planning to place transuranic waste (TRU) at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, NM. NEPA documentation and RCRA concerns (for mixed TRU) have delayed placement of waste at WIPP. DOE has submitted a no-migration petition to EPA that, if approved, will allow mixed TRU placement. Certain TRU wastes are to be incinerated and the ash immobilized before disposal. Greater Confinement Disposal (GCD) is being assessed to dispose TRU.

Low-level waste (LLW) may be disposed in shallow land disposal sites. This is being done at several of the DOE sites. Mixed LLW cannot be land disposed without first meeting RCRA treatment standards. EPA requires treatment for each hazardous constituent in the mixed waste stream (BDAT standards). As might be suspected, incineration is the required treatment for most organic constituents. Other hazardous constituents require stabilization to prevent leaching. Some waste streams need multiple treat-

ments (e.g., ash from incineration may need stabilization

before land disposal).

BUILD COMPLIANT TREATMENT

DOE needs to develop additional treatment capacity merely to treat its newly generated wastes, without regard to wastes that are already stored. Besides treating RMW, the current treatment capacity is already being used to treat hazardous wastes and nonhazardous radioactive wastes, and the "Thirds" category of LDR mixed wastes. While DOE is continuously reevaluating the amount of necessary additional treatment capacity, significant additional incineration and stabilization capacity is likely to be required.

As RCRA compliant treatment is identified, DOE intends to build sufficient treatment capacity for its wastes. This treatment must protect the operators from the radioactivity associated with the waste stream while properly treating the hazardous portion of the waste stream and. DOE will meet the requirements of all applicable environmental laws and will obtain permits for these facilities. DOE will integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts.

PARTICIPATE IN REGULATORY DEVELOPMENT

Before EPA's 1986 mixed waste rule and DOE's 1987 Byproduct Rule, application of RCRA to mixed waste streams was open to question. Because of this, DOE's mixed waste streams were not fully considered by EPA in its solvent and California list rulemakings. Now, however, DOE fully participates in the regulatory development process. When EPA proposes rules, DOE makes formal comments. In addition, DOE's Office of Environmental Guidance and Compliance maintains a working relationship with EPA's regulation development staff. LDR treatment standards for all mixed thirds waste was deferred until the third third rulemaking proposal, which was published November 23, 1989. EPA proposed to grant a 2-year national capacity variance for mixed "thirds" waste. DOE submitted data to EPA to justify this 2-year variance, and also submitted information about four mixed waste stabilization methods as part of EPA's regulatory process. DOE also has the option of seeking two 1-year case-by-case exemptions from treatment standards.

EPA also proposed separate treatment standards for radioactively contaminated lead (D008) and mercury (D009). For lead, encapsulation is proposed as a permissible treatment. Radioactive mercury (principally contaminated with tritium) is proposed to be amalgamated with zinc and land disposed.

COMPLY WITH REGULATIONS

RCRA regulations require that waste either meet treatment standards or be treated before land disposal. They also

forbid storing waste longer than necessary to accumulate "such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal. . ." (40 CFR § 268.50, compare RCRA §3004(j)). It could be argued that the quantities of waste that DOE generates and stores are greater than this amount.

Although the storage provision of 40 CFR § 268.50 applies only to wastes that were placed in storage after the LDR effective date, these wastes still comprise nearly 70,000 cubic meters of present storage and much of the 97,000 cubic meters of annual generation. Since DOE doesn't have enough treatment capacity for this amount of waste, DOE is going to the regulators and is seeking compliance agreements with state and federal environmental regulators that will set up scheduled milestones to bring

sites into full compliance with RCRA. If compliance schedules are met, no other enforcement action is anticipated during the term of the compliance agreement.

As stated above, DOE intends to comply fully with all environmental regulations. The Secretary commissioned a "tiger team" of compliance assessors to identify noncompliant situations. Where noncompliance is identified, DOE is taking necessary steps to come into compliance with the regulations. Where necessary, DOE will negotiate compliance agreements with regulators in order to assure the public of DOE's intention to comply with the law. DOE will request funding for necessary activities and will continue to keep regulators informed of the status of DOE progress.