

RESOURCE CONSERVATION AND RECOVERY ACT REAUTHORIZATION

B. Shackleford
U. S. Department of Energy
Audrey L. McAllister
BDM International, Inc.

ABSTRACT

Originally passed in 1976, the Resource Conservation and Recovery Act (RCRA) was enacted to establish the first comprehensive Federal waste management system providing for "cradle-to-grave" management of hazardous waste. In 1980, the Department of Energy (DOE) took the position that its weapons production related activities were exempt from RCRA. This position was based on the Atomic Energy Act's (AEA) jurisdiction over DOE's nuclear facilities, and Section 1006 (a) of RCRA, which provides that the requirements of RCRA do not apply to "any activity or substance which is subject to the Atomic Energy Act of 1954." Later, litigation clarified that RCRA was applicable to DOE's hazardous waste; but there was no determination made on RCRA's applicability to mixed waste. Therefore, DOE did not significantly participate in the legislative process that led to the 1984 Hazardous and Solid Waste Amendment (HSWA) to RCRA. Today, RCRA has grown to be one of the most important statutes affecting DOE waste management activities.

In the coming sessions, Congress will once again be considering the reauthorization of RCRA. RCRA reauthorization will require Congress to evaluate numerous complex issues. DOE will take an active role in the legislative activities process, DOE has identified the following issues that should be addressed during the reauthorization of RCRA:

- RCRA Should Provide Waste Management Requirements Specific to the Unique Problems and Hazards Associated with Mixed Waste,
- RCRA Should Provide Criteria for the National Prioritization of Waste Cleanup conducted Under RCRA,
- RCRA's Waste Cleanup Requirements Should Be Integrated with Those of CERCLA to Improve Efficiency and Eliminate Duplication of Efforts,
- RCRA Should Require Establishment of De Minimis Levels for the Management of Hazardous Waste, and
- Interstate Transport of Hazardous Waste.

INTRODUCTION

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 as an amendment to the Solid Waste Disposal Act. RCRA's primary objective is to protect human health and the environment through implementation of a comprehensive waste management program that encompasses hazardous waste management from the point of waste generation until its ultimate disposal. Since the enactment of RCRA, Congress has passed two sets of amendments: The Solid Waste Disposal Act Amendments of 1980 (Pub. L. No. 96-482, 94 Stat. 2334), and a major set in 1984, called the Hazardous and Solid Waste Amendments of 1984 (HSWA) (Pub. L. No. 98-616, 98 Stat. 3221).

RCRA applicability to hazardous waste management at Department of Energy (DOE) facilities was clarified in 1984, but it was not until DOE issued its final By-Product rule in 1987 that the debate surrounding RCRA applicability to mixed waste was resolved (mixed wastes are those wastes that contain both a radioactive and a hazardous waste component). As a result, DOE did not participate in the legislative process which provided the RCRA framework, nor in the regulatory development process which was largely already in place by 1987.

DOE operates approximately 1,000 RCRA treatment, storage and disposal (TSD) facilities. These facilities generate

approximately 50,000 cubic meters of hazardous waste annually. DOE estimates that it will spend over \$2.0 billion for RCRA compliance in FY 1991 and \$2.9 billion in FY 1992. In the coming sessions, RCRA reauthorization will require Congress to evaluate numerous complex issues that will significantly impact DOE facilities. Therefore, DOE will take an active role in the legislative activities related to RCRA's upcoming reauthorization. This paper discusses RCRA compliance issues at DOE facilities that may be considered during the reauthorization of RCRA.

RCRA Should Provide Waste Management Requirements Specific to the Unique Problems and Hazards Associated with Mixed Waste.

RCRA and its implementing regulations focus on the management of the hazardous component of mixed waste and do not consider the radiological hazards associated with this waste. Strict compliance with RCRA may result in increased and unjustified radiation exposures. Specific mixed waste management regulations are needed that provide requirements appropriate to hazards associated with both the radioactive and hazardous components of the waste.

Increased Radiation Exposure to Workers

Radiation is a known carcinogen. Thus, like chemical carcinogens, exposure to radiation should be minimized.

DOE has established radiation standards (DOE Order 5480.11) to protect workers from exposure to radiation in operations involving radioactive materials and waste. These exposure limits are consistent with international standards. Under existing RCRA provisions, strict compliance may cause increased occupational radiation exposures, because RCRA waste treatment, storage, and disposal requirements were written without consideration of the radiological hazards posed by mixed waste.

In many instances, certain RCRA-required activities would cause radiation exposures to workers in excess of the 5 rem annual occupational radiation exposure limits. In some instances, the exposure limit would be exceeded as a result of only one day of RCRA compliant activity. In such cases, DOE could not meet RCRA's requirements and maintain occupational radiation exposures to levels "As Low As Reasonably Achievable" without utilizing an extremely large number of employees and "burning up" their annual radiation exposures limits. Such exposures are simply not justified.

DOE has identified various RCRA regulatory requirements that, when applied to mixed waste management, can cause increased radiation exposure to workers at DOE's facilities. (Note: DOE recognizes that the regulations offer limited allowances from some of these requirements in the form of variances). Several examples are presented below.

- Inspection of Process - Daily physical inspections of many mixed waste process areas cannot be performed without causing increased radiation exposure to workers.
- Waste Characterization, Sampling, and Analysis - Recommended methods of waste characterization and sampling can cause increased radiation exposure to workers.
- Inspection of Storage Areas - At many DOE mixed waste storage facilities, weekly physical inspections and changes to provide compliant container storage configurations cannot be performed without causing increased radiation exposure to workers.
- Clean Closure of Tanks - Requirements for clean closure (removal of all mixed waste contents from storage tanks prior to their closure and storage or treatment of the contents) may cause excessive radiation exposure to workers.
- Labelling of Waste Containers - Labelling of certain highly radioactive mixed waste, such as reactor control rods, during a cooling period to allow radioactive decay, is not feasible in most circumstances and attempts to do such would significantly increase radiation exposure to workers.

Storage of Mixed Waste

The lack of mixed waste treatment technologies necessitates the long-term storage of massive volumes of mixed waste. However, storage of mixed waste for purposes other than to accumulate sufficient quantities of waste necessary to facilitate proper treatment, recovery, or disposal is prohibited under RCRA's Land Disposal Restrictions (LDRs) regulations.

DOE estimates that it produces over 95 percent of the Nation's mixed wastes, including virtually all high-level and transuranic mixed waste. DOE will likely store these mixed

wastes for 10 to 15 years while it develops and obtains permits for RCRA compliant treatment technologies. DOE currently stores about 140.6 million gallons (532,000 cubic meters) of land disposal restricted mixed waste at 30 facilities, and generates about 14 million gallons per year from about 700 waste streams. Treatment technologies for much of DOE's mixed waste have not been identified. While development and demonstration of treatment capacity is needed for over two-thirds of DOE's mixed waste.

RCRA allows the Environmental Protection Agency (EPA) to grant temporary relief from the LDR storage prohibitions when it finds that sufficient treatment capacity does not exist for a particular restricted waste. In the "Third Thirds" LDR final rule, which was promulgated in May 1990, EPA granted a National Capacity Variance that applies to approximately 30 percent of the Department's land disposal restricted mixed wastes. The National Capacity Variance EPA issued for Third Thirds wastes will expire in May 1992, and all potentially available extensions for these wastes (such as the Case-by-Case) will be exhausted by mid-1994.

DOE's current inability to comply with RCRA storage prohibitions should not be interpreted as a lack of commitment to the development of necessary treatment technologies and treatment capacity. DOE has initiated an aggressive research and development (R&D) program devoted to waste management and cleanup. DOE expects to commit approximately \$2.85 billion on the R&D program by 1997.

RCRA Should Provide Criteria for the National Prioritization of Waste Cleanup Conducted Under RCRA

RCRA does not provide for national prioritization of waste cleanup actions. Therefore, every cleanup conducted under RCRA becomes a "top priority."

Prioritization

The cleanup of hazardous or radioactive mixed waste under a RCRA corrective action is similar to that under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). There is, however, one major difference between the cleanup of contaminated sites under the two statutes. CERCLA clearly ranks sites on the National Priority List (NPL) through the CERCLA Hazard Ranking System (HRS). The HRS, which scores contaminated sites based on their particular threats to human health and the environment, is used to determine whether or not a CERCLA Site should be placed on the NPL. RCRA, however, establishes no such priority system. Under RCRA, the schedule for corrective actions in a particular permit is agreement are not cross-referenced or prioritized on the basis of risks at other cleanup sites.

One reason for this difference is that the original focus in CERCLA was to have EPA fund and conduct site cleanups and then recover the cost from responsible parties while RCRA requires facility owner/operators to perform the cleanups. Thus, under CERCLA, there was an interest in conserving and prioritizing Federal resources, while under RCRA there is no such concern. Consequently, RCRA requires a treatment, storage, or disposal (TSD) facility with multiple corrective actions and closure sites to commit resources and efforts at each corrective action site without regard to the comparative risks between sites. This problem

is even more pronounced when a private firm or governmental agency must undertake numerous corrective actions in different states without a national prioritization scheme. As a result, critical actions at the most significant sites may be adversely impacted while resources are spent at sites which pose less risk.

Need for National Prioritization Scheme

Without a statutorily-mandated national prioritization scheme, DOE, EPA, and State regulators will have no mechanism to address sites presenting the greatest risk first. Funding requirements necessary to meet all the regulatory demands of CERCLA Interagency Agreements (IAGs), RCRA 3004(u), and RCRA 3008(h) cleanup actions across the DOE complex may exceed DOE funding levels.

RCRA's Waste Cleanup Requirements Should Be Integrated with Those of CERCLA to Improve Efficiency and Eliminate Duplication Efforts

There are approximately 3700 individually contaminated sites at a total of 30 DOE defense production facilities and laboratories. To date, DOE has identified 139 contaminated sites regulated under CERCLA, 173 sites regulated under RCRA, and 358 sites regulated under both RCRA and CERCLA. As a result, DOE is conducting cleanups of contaminated sites at its facilities under CERCLA or RCRA, and in some cases, both statutes simultaneously.

Duplication of Efforts

Unnecessary duplication of cleanup efforts and costs associated with waste cleanup activities arise because of the lack of integration between CERCLA and RCRA compliance activities. Examples of RCRA/CERCLA incongruencies include:

- CERCLA is implemented under the National Contingency Plan (NCP). The NCP requires that cleanup remedies be screened for effectiveness, implementability, and cost. Consideration of the cost of a potential remedy is not allowed at RCRA sites.
- The CERCLA requirement for response actions to comply with all "applicable or relevant and appropriate requirements" (ARARs) for other statutes, including RCRA's land disposal restriction (LDR) requirements, may create a disincentive for removal or treatment of waste under CERCLA.

Wastes generated through CERCLA cleanups that contain RCRA LDR wastes must, due to this particular ARAR requirement, meet LDR treatment standards. The lack of treatment capacity and the prohibition on long-term storage of CERCLA-generated LDR mixed wastes could influence a responsible party to leave the waste in the ground. A less restrictive treatment requirement or a more flexible storage allowance would serve to promote the excavation and treatment of CERCLA wastes.

- Unnecessary duplication of cleanup requirements and regulatory authority can unduly burden the efficiency of waste cleanup operations.

In some cases, identically-designed disposal units located side-by-side at the same site may have received the same RCRA regulated waste streams,

differing only in the date on which waste was disposed. If disposal occurred after November 19, 1980, the unit would be regulated as a RCRA unit. If the disposal was prior to November 19, 1980, the unit would be regulated as a "past-practice" unit under CERCLA or RCRA/HSWA. Because the units are cleaned up under different authorities, different scheduling, investigation and cleanup procedures may be required. A single investigation with coordinated closure activity of the two units under either RCRA or CERCLA would be the most efficient method to remediate the site. Only one process, RCRA or CERCLA, should be designated for similarly situated disposal units.

RCRA Should Require Establishment of De Minimis Levels for Hazardous Waste.

A waste is subject to RCRA hazardous waste regulations if it is determined to exhibit a characteristic of hazardous waste, or it is listed as RCRA hazardous. Characteristic hazardous waste may be treated to a level at which it is no longer considered hazardous, however, no such levels exist in the current regulations for listed hazardous waste. This RCRA regulatory scheme also includes other pertinent provisions including the "mixture rule," the "derived from" rule, and the "contained-in" policy.

"Mixture Rule" - In accordance with the "mixture rule," if a solid waste is mixed with a listed hazardous waste, the entire mixture is a listed hazardous waste.

"Derived From Rule" - Similarly, under EPA's "derived from" rule, any wastes that are generated from the handling of hazardous waste (i.e., treatment, storage, or disposal, etc.) are listed hazardous wastes.

"Contained-In Policy" - Finally, EPA has developed the "contained-in" policy that requires environmental media (e.g., ground water, soils) contaminated with listed wastes to be managed as listed hazardous waste.

Delisting Process

The only option available to a generator of a listed, mixed, or derived from waste as discussed above, that is not actually "hazardous" from a risk-based perspective, is the RCRA delisting process. However, this process is costly, cumbersome, and time consuming. EPA has worked intermittently on a delisting regulation for several years. Final promulgation of such a regulation is likely to require legislation supporting such an action.

Interstate Transport of Hazardous Waste

Interstate transport should remain a viable component of waste management. Use and development of the most effective waste management options should not be limited by restricting interstate commerce. Several issues need to be considered.

Economics of Scale

There may be economical benefits to methods of waste management that involve multi-state transport of waste materials. Specialized waste management services often are based on state-to-state interdependence because individual states fail to generate enough of a particular waste to support a full-scale waste management facility.

Risk and Cost Impacts from Duplication of Capacity

Limiting interstate waste transport could keep wastes in states where they cannot be handled in the most environmentally sound manner; thereby unnecessarily increasing risks to public health and the environment. Interstate waste transport limitations could also result in states being forced to replicate waste management facilities already operating in neighboring jurisdictions.

Local Environment and Waste Characteristics Limit Siting Options

Some wastes require specialized management practices whose application may be limited by local environmental conditions. These waste management practices may be environmentally unsound in certain states. Also, facility siting procedures could become a concern (e.g., a state with limited capacity may find itself in need of additional waste management facilities while faced with a burdensome siting/permitting process).

DOE's radioactive mixed waste streams could be severely impacted by the prohibition of interstate transportation because of limited TSD capacity for these wastes. Much of this waste was generated from the production of nuclear material for defense or research purposes, or from management of existing waste streams. The Department needs to develop substantial mixed waste treatment capacity to treat both the newly generated waste and the massive volumes of wastes in

storage resulting from nearly 50 years of national defense activities.

CONCLUSION

The reauthorization of RCRA guarantees additional requirements that will affect DOE's day-to-day waste management. However, it provides an opportunity for DOE and other members of the public and private sectors to actively participate in the legislative process and focus Congressional attention on the regulatory dilemma surrounding RCRA applicability to mixed waste. For Congress, RCRA reauthorization provides an opportunity to refine the RCRA program so that compliance is not only technically feasible but achievable within required timeframes. And, for regulators, it provides an opportunity to help charter a regulatory regimen that considers the dual hazards posed by mixed waste.

The need to reassess certain RCRA requirements was recently underscored when the Senate approved the Federal Facilities Compliance Act of 1991. That Bill, if passed by the full Congress, would amend RCRA to expand the existing waiver of sovereign immunity to cover fines and penalties and administratively assessed orders at DOE facilities. The amendments would also extend the existing RCRA LDR storage prohibition until December 1993 with the potential for renewable annual extensions through 1997.

We look forward.