

REGULATORY FRAMEWORK FOR HAZARDOUS MIXED WASTES

S. J. Bass
NUS Corporation
148 Fairbanks Road
Oak Ridge, Tennessee 37830

ABSTRACT

A recent court decision has raised the possibility that wastes that are both hazardous and radioactive may be regulated by: the Resource Conservation and Recovery Act of 1976, as amended (RCRA); and by the Atomic Energy Act of 1954, as amended (AEA). A chronological review of regulatory developments and positions is used to identify apparent and potential U.S. Department of Energy (DOE) concerns regarding these wastes and their possible regulation by RCRA. Identified concerns deal with radiological hazards, the prevention of the disclosure of restricted information, problems associated with State regulation, and the lack of feasible alternatives to land disposal.

INTRODUCTION

Wastes that are both hazardous and radioactive have been commonly referred to as: hazardous mixed wastes; radioactive mixed wastes; mixed wastes; and co-contaminated wastes. These wastes pose a special problem for U.S. Department of Energy (DOE) facilities operated under the authority of the Atomic Energy Act of 1954, as amended (AEA).

An April 13, 1984 court decision has raised the possibility that AEA facility mixed wastes may be regulated by both the AEA and the Resource Conservation and Recovery Act of 1976, as amended (RCRA).

The Federal agencies responsible for each Act (the U.S. Environmental Protection Agency for RCRA, and DOE for the AEA at AEA facilities) are currently working towards the development of a clearly defined regulatory framework for the management of these wastes. The development of this framework will require a delineation of agency responsibilities, and the resolution of conflicts in the regulatory programs. Resolution will be especially difficult in view of the November 8, 1984 RCRA amendments.

This paper presents a chronological review of the regulatory developments and positions leading up to, and including, the April 13, 1984 court decision, and the November 8, 1984 RCRA amendments. A summary section identifies apparent and potential DOE concerns based upon the chronological review.

CHRONOLOGICAL REVIEW

RCRA Enactment and Applicability to Federal Facilities

When RCRA was enacted in 1976, it set up a program for the cradle-to-grave management of hazardous waste. Hazardous wastes were defined as "solid wastes" that were considered to be hazardous due to certain characteristics. "Solid wastes" included: garbage, refuse, and sludge; and could include semi-solids, liquids, and containerized gases. EPA was empowered to develop and promulgate criteria for identifying the characteristics of hazardous waste, and for

listing such wastes. In addition, EPA was empowered to establish such standards for generators, transporters, and owners/operators of hazardous waste management treatment, storage, and disposal (TSD) facilities as it deemed necessary to protect human health and the environment. In regulating owners/operators of TSD facilities, EPA was required to establish a permit program. RCRA dictated that EPA was to administer and enforce RCRA, unless a state had obtained EPA authorization to administer and enforce its own RCRA program, in lieu of the Federal program. State programs were required to be equivalent to the Federal program, and could be more stringent. If a State had an authorized program, EPA would retain oversight authorities.

With regard to solid and hazardous waste management, Section 6001 of the Act said that all branches of the Federal Government were subject to and must comply with all Federal, State, interstate, and local requirements (including substantial and procedural requirements), to the same extent as any person is subject to such requirements. Although this section indicated that RCRA was applicable to all Federal facilities, the Act included two important exclusions with regard to the AEA:

1. Section 1006(a) of the Act stated that "nothing in this Act shall be construed to apply to (or authorize any State, interstate or local authority to regulate) any activity or substance which is subject to...the Atomic Energy Act of 1954 (42 U.S.C 2011 and following), except to the extent that such application (or regulation) is not inconsistent with the requirements of such (Act)".
2. Section 1004 (27) of the Act stated that the term "solid waste" did not include source, special nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended. Since RCRA regulated only "solid wastes" that were determined to be hazardous, this section excluded such AEA material from RCRA regulation.

In addition to these exclusions, RCRA also provided, in Section 6001, that the President could

exempt any solid waste management facility of DOE or any other department, agency, or instrumentality of the executive branch from compliance if he determined that it was in the paramount interest of the United States to do so. An exemption could be issued for a period of not longer than one year, but back-to-back exemptions could be issued.

RCRA Program Development

By December of 1982, 34 states had obtained at least partial authorization to administer and enforce their own State RCRA programs. In addition, EPA had promulgated final regulations, including those at 40 CFR Parts 260-265, 267 and 270:

<u>40 CFR Citation</u>	<u>General Topic Covered</u>
Part 260	General Information, Terms, Petitions
Part 261	Identification and Listing of Hazardous Wastes
Part 262	Standards for Generators
Part 263	Standards for Transporters
Part 264	"Final" Permitting Standards for TSD Facilities
Part 265	"Interim Status" Permitting Standards for TSD Facilities
Part 267	"Interim Status" Permitting Standards for New Land Disposal Facilities
Part 270	Permitting Program Requirements

Under the regulations, waste was considered to be a hazardous waste if it met the RCRA definition of a "solid waste", and if it was either:

1. Listed (or mixed with hazardous waste listed) at 40 CFR Part 261; or if it
2. Exhibited any one of four hazardous characteristics (EP toxicity, ignitability, corrosivity or reactivity).

"Large" quantity generators (those generating over 1000 Kg/month), transporters, and owners/operators of TSD facilities were required to have an EPA ID. No., manifest their hazardous wastes, and follow other specific requirements including recordkeeping and reporting requirements.

TSD facilities were divided into 12 facility types:

1. Ocean Disposal Barges or Vessels
2. Injection Wells
3. Publicly Owned Treatment Works
4. Containers
5. Tanks
6. Surface Impoundments
7. Landfills
8. Waste Piles

9. Land Treatment Facilities
10. Thermal Treatment Facilities
11. Chemical, Physical and Biological Treatment Facilities
12. Incinerators

Facility types 1-3 were considered to be permitted by rule, so long as they complied with certain requirements. Facility types 4-12 were required to comply with a more formal permitting process. In this process, a facility was considered to have a permit if a RCRA Part A permit application and notification of hazardous waste activity had been provided, and it was in compliance with the interim status standards of 40 CFR Part 265. When requested to do so, the facility owner/operator was also required to submit a RCRA Part B permit application within 180 days. Upon receipt of a final written RCRA Part B permit, the facility was required to meet the more stringent permitting standards of 40 CFR Part 264. If the facility was a new landfill, surface impoundment or land treatment facility, it could be permitted under 40 CFR Part 267 until 40 CFR Part 264 standards for these facilities became effective.

Facility types 4-12 were required to have contingency plans, waste analysis plans, a security system, inspection schedule/log, a personnel training program, an operating record, and a closure plan. Special emphasis was placed on design, groundwater protection, and closure requirements for surface impoundments, landfills, and waste piles. Except for existing portions, all of these facilities were required to either have a double liner with a leachate collection system, or have a single liner and be subject to groundwater protection requirements. At closure, the following procedures were required:

Impoundments: all wastes and contaminated soils had to be removed; or free liquids had to be eliminated by removal or solidification of remaining wastes and waste residues, and a final cap had to be added.

Waste piles: all wastes and contaminated soils had to be removed.

Landfills: a final cap had to be added.

Post-closure care was required if any wastes or contaminated soils were left in place or could have been left in place.

DOE Position and Response

The AEA provided DOE with the authority to govern the possession and use of special nuclear material, source material and byproduct material through the use of rules, regulations or orders. With regard to this authority, DOE could establish whatever standards or instructions it deemed necessary, or desirable, to promote the common defense and security, or to protect health, or to minimize danger to life or property.

At DOE facilities operated under the authority of the AEA, hazardous wastes, as well as mixed wastes and radioactive wastes, were considered to be under the exclusive control of DOE. Waste management activities were regulated through the issuance of DOE Orders.

On December 13, 1982, DOE issued DOE Order 5480.2 for Hazardous and Radioactive Mixed Waste Management. The purpose of the Order was to establish hazardous waste management procedures for all AEA facilities. To "the extent practical", the procedures were said to be designed to follow the EPA RCRA regulations.

The Order defined hazardous wastes as being those considered to be hazardous under RCRA. Regarding these wastes, the Order required AEA facilities to comply with the technical requirements of RCRA, as well as with certain RCRA based and DOE recordkeeping and reporting requirements. Each DOE Operations Office was directed to prepare an Implementation Plan regarding the Order. If full compliance could not be achieved, DOE exemptions could be requested. Alternatives to RCRA requirements could be proposed, if the alternatives provided assurance of equal or greater protection of health, safety and the environment.

The Order provided the following definition regarding radioactive, radioactive mixed and transuranic wastes:

Radioactive Wastes: "Solid or fluid materials of no value containing radioactivity; discarded items such as clothing, containers, equipment, rubble, residues or soils contaminated with radioactivity; or soils, rubble, equipment or other items containing induced radioactivity such that the levels exceed safe limits for unconditional release."

Radioactive Mixed Wastes: "Radioactive waste which also contains hazardous waste characteristics."

Transuranic Waste: "Transuranic contaminated material (that) has been declared as having no significant economic value or use." Transuranic contaminated material was defined as "material which, without regard to source or form, contains certain alpha-emitting radionuclides with long half-lives in concentrations greater than 100 nCi/g."

No definitions, however, were provided for the terms low-level or high-level radioactive waste.

Regarding low-level radioactive mixed wastes, the radiological controls of DOE Order 5820.1 were to be followed, and additional controls were to be applied, as necessary, to assure protection equivalent to that afforded by compliance with 40 CFR Parts 260-265. (DOE Order 5820.1 had been issued on September 30, 1982 to govern the management of transuranic contaminated materials.) Regarding high-level and transuranic radioactive mixed wastes, the radiological controls of DOE Order 5820.1 were to be followed, verification was required to ensure adequate protection from potential hazards that might be derived from hazardous waste characteristics (other than radioactivity), and additional requirements were to be imposed if necessary to achieve such protection.

In August of 1983, DOE issued a guidance document to the DOE Operations Offices regarding preparation of the 5480.2 Implementation Plans. This document requested that the Operations

Offices consider both RCRA hazardous wastes and low-level radioactive mixed wastes to be hazardous, and subject to the hazardous waste requirements as specified in the Order. This document also requested that the Implementation Plans (IPs): be prepared and submitted within 6 months; document the compliance status of the AEA facilities; and include schedules and costs for bringing non-compliant AEA facilities into compliance. The IPs were to be based upon (and accompanied by) Hazardous Waste Management Plans (HWMPs) prepared by the AEA facility contractors. An HWMP was to be prepared for each AEA facility.

On February 6, 1984, DOE issued DOE Order 5820.2 for Radioactive Waste Management. This Order cancelled DOE Order 5820.1, and replaced it with a more encompassing program. The purpose of the new Order was to provide policies and guidelines for the management of radioactive waste, waste byproducts, and radioactivity contaminated surplus facilities at DOE facilities under the AEA. The Order set forth requirements for the management of:

1. High-level waste
2. Transuranic waste
3. Low-level waste
4. Wastes contaminated with naturally occurring radionuclides

The requirements addressed such areas as waste classification, treatment, storage, disposal, and waste acceptability for disposal. In addition, it set forth requirements for the decontamination and decommissioning of surplus facilities. The Order also provided definitions for all of the waste types addressed, and provided an integration of the provisions of DOE Order 5480.2.

Although the Order allowed continued use of shallow land burial (and greater confinement if necessary) for low-level wastes, it required the RCRA hazardous characteristics of low-level wastes to be considered in the development of waste acceptance criteria for disposal. It also required that certain requirements be followed regarding the site selection, design, operation, closure, and post-closure care of the burial sites.

Each DOE Operations Office was requested to prepare and submit a 5820.2 Implementation Plan (IP) within 6 months. Each IP was to contain schedules and costs for program compliance. Thereafter, each Operations Office was to report its compliance status, and describe its waste management program through the annual issuance of Site Waste Management Plans.

Court Challenge, And DOE/EPA Memorandum of Understanding

While DOE was working on DOE Orders 5480.2 and DOE Order 5820.2, it received a court challenge of its exclusive control over hazardous waste management at AEA facilities. The challenge centered on the Y-12 Plant, an AEA facility located in Oak Ridge, Tennessee, and engaged in the fabrication and certification of nuclear weapons components. In effect, the Legal Environmental Assistance Foundation, Inc., Natural Resources Defense Council, Inc., and the State of Tennessee (as a Plaintiff- Intervenor) contended

that the Y-12 plant was subject to RCRA, and, consequently, should be required to comply with RCRA, its permitting process, and any authorized State RCRA programs. DOE contended that RCRA was totally inconsistent with the AEA, and should not be applied to AEA facilities such as the Y-12 plant. DOE's contention was based upon three arguments:

1. That the AEA precludes State regulation of DOE activities, while RCRA subjects Federal facilities to State regulations.
2. That RCRA gives the EPA, State, and local authorities the authorization to set waste disposal standards, while the AEA provides DOE with this authority.
3. That the AEA restricts the dissemination of restricted data pertaining to nuclear weapons and material, while RCRA would provide public disclosure of the information.

While the court case was in progress, and approximately two weeks after the issuance of DOE Order 5820.2, DOE signed a Memorandum of Understanding (MOU) with EPA for Hazardous Waste and Radioactive Waste Management on February 22, 1984. The MOU applied only to AEA facilities, and set up a hazardous and radioactive mixed waste management program that was stated as being "compatible" with the criteria and requirements adopted by EPA to implement RCRA. Hazardous wastes were defined as being RCRA hazardous waste. Radioactive mixed waste were defined as being hazardous wastes containing source, special nuclear or by product materials.

The MOU contained four key provisions:

1. DOE agreed that AEA facilities would comply with 40 CFR 262-266 regarding the generation, transportation, treatment, storage, and disposal of both types of wastes. If necessary, however, DOE and EPA could modify these standards to ensure protection from radiological hazards to health and safety. DOE and EPA could make such modifications by agreement, so long as the modifications provided a level of human health and environmental protection equivalent to that achieved under the RCRA requirements being modified. (Note: 40 CFR Part 266 was to be promulgated in final form, and contain standards for the management of types of hazardous wastes and waste management facilities such as recyclable materials).
2. A system was set up whereby TSD facilities would receive an EPA Hazardous Waste Compliance Plan (HWCP) instead of a RCRA Part B permit. Upon EPA notice, DOE was to utilize 40 CFR Part 270, and request a HWCP. DOE's request was to contain the same information as was required to be in a RCRA Part B permit application. The EPA notice would specify when the request was due, and DOE would be provided with at least 180 days in which to submit the request. EPA was to review the request, write a draft HWCP, put it out for public comment and,

subject to revisions, issue a final HWCP to DOE. DOE was to review the draft HWCP to ensure that no classified information would be disclosed.

3. DOE was to perform its own TSD facility inspections, and agreed to allow "properly cleared EPA-designated personnel" to perform site inspections. If EPA determined that an AEA facility was in MOU non-compliance (including the HWCP), EPA would issue a compliance demand. A demand could be written based upon a site inspection, reports, or any other information. Following the demand, DOE and EPA would agree to a compliance schedule, and DOE would implement the schedule.
4. EPA was to administer the MOU provisions, but would consult with affected states regarding the issuance of HWCPs, and proposed modifications to standards. In addition, EPA would enforce the MOU provisions, but would consult with affected states concerning enforcement. EPA was to be provided with the security clearance necessary to fulfill its responsibilities under the MOU.

Shortly after the MOU was signed, the U.S. District Court in Knoxville, Tennessee, rendered its decision in the form of an order and memorandum filed on April 13, 1984. The court denied DOE's contention that RCRA was totally inconsistent with the AEA. It held that:

1. AEA facilities were subject to RCRA, except for those wastes (nuclear and radioactive materials) expressly regulated by the AEA.
2. State and local regulation of AEA facilities under RCRA was consistent with the AEA, since AEA facilities were already regulated by State and local regulations under other environmental statutes (e.g., Clean Water Act, Clean Air Act, Toxic Substances Control Act).
3. The application of RCRA to the Y-12 plant would be inconsistent with the AEA if it required disclosure of restricted nuclear material. However, DOE had not proven that such an inconsistency would result. If DOE was concerned that the security of such data would conflict with RCRA, the court suggested that DOE seek a Presidential RCRA exemption for the Y-12 plant.

For the reasons cited above, the court ordered that DOE proceed with "all deliberate speed" to file for and seek a RCRA permit for the Y-12 plant treatment, storage, and disposal facilities.

Philosophy and Provisions of 1984 RCRA Amendments

On November 8, 1984, the 1984 RCRA amendments were signed into law. Although a number of the amendments are pertinent to the mixed waste issue, the philosophy and provisions of certain of the amendments are of particular importance.

Several amendments clearly reflected the philosophy that, as far as Congress was concerned,

the use of certain classes of land disposal facilities should be minimized or eliminated, because they were not capable of assuring long-term containment of certain hazardous wastes. Example provisions are provided as follows:

1. Existing surface impoundments will have to be retrofitted to meet double-liner, leachate collection, and groundwater monitoring requirements, or they will have to stop receiving hazardous waste.
2. Immediate bans were placed (and future bans will be placed) on the land disposal of certain wastes in surface impoundments, waste piles, landfills and injection wells.
3. Surface impoundments that store or treat a hazardous waste that is banned from land disposal must have the waste's residues removed within one year of the waste's placement in the impoundment.
4. Land disposal facilities must meet new minimum technology standards.
5. With the exception of the New Mexico Waste Isolation Project, the placement of bulk liquids and containerized hazardous wastes in salt domes, salt beds, underground mines or caves is prohibited until the facility receives a permit.

Other provisions were also included to regulate small quantity generators of hazardous waste, and underground tanks holding hazardous substances (including radioactive materials). In addition, the amendments stated that Federal facilities will be required to submit a biennial inventory of each TSD facility it owns/operates or has owned/operated. In addition, each federally

owned TSD facility must be inspected by the EPA (or by an authorized State) on a yearly basis.

CONCERN IDENTIFICATION

From the chronological review provided above, it is apparent that DOE desires to be responsive in ensuring that hazardous and mixed wastes are properly managed at AEA facilities. The issuance of DOE Orders 5480.2 and 5820.2, and the agreements reached in the referenced MOU, are clear indications of this desire. On the other hand, the MOU and the DOE positions taken in the referenced court challenge also point out DOE's apparent principal concerns with regard to RCRA:

1. Concern that RCRA compliance doesn't result in the creation of radiological hazards;
2. Concern that restricted information doesn't become public knowledge; and
3. Concern that their AEA facilities will be subject to State administration and enforcement. (State regulation would present special problems, since such regulation would involve the provision of security clearances to hundreds of State regulators, and the need for DOE to have to come to separate agreements with each State with an authorized State program.)

In addition to these apparent concerns, imposition of the 1984 RCRA amendments would pose substantial problems for a variety of reasons. For example, DOE currently relies heavily on land disposal as a means of isolating mixed waste until it is no longer radiologically hazardous. Waste bans and restrictions/bans on current disposal practices may not be feasible until alternative disposal technologies can be developed, tested, and implemented.