

# The "mixed waste" dilemma

By Marion Elliott Deerhake

## Definition of mixed waste

"An issue of immediate concern in managing low-level radioactive waste (LLW) is the regulation of 'mixed' LLW—waste that is both radioactive, as defined in the Low-Level Radioactive Waste Policy Amendments Act, and hazardous, as defined by the Resource Conservation and Recovery Act (RCRA). This waste is regulated by both the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA). . . . No disposal facility for mixed LLW has been available since 1985."

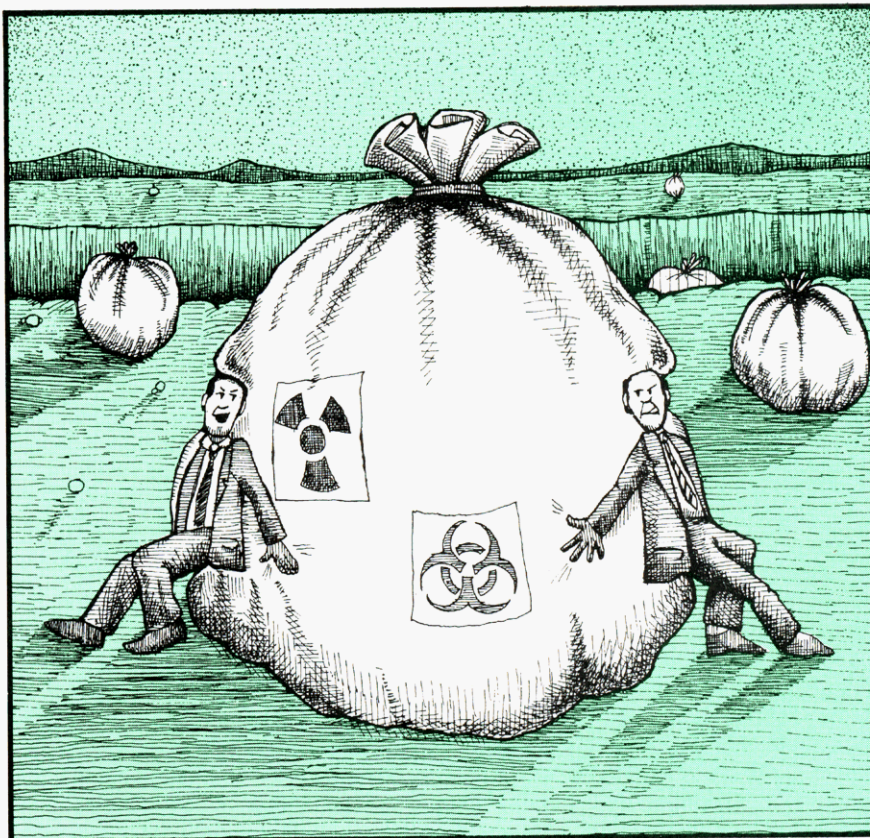
U.S. Office of Technology Assessment (1)

There is an immediate need for finding both technically and economically feasible solutions to the mixed waste management issue. The absence of commercial waste management capacity will force some generators of such waste to enter into expensive and time-consuming permitting procedures for this single stream of waste, which makes up only a small fraction of the hazardous wastes generated in the United States.

## Regulatory background

On July 3, 1986, EPA published its interpretation of state authorization to regulate the hazardous components of radioactive mixed wastes under RCRA (2). EPA published a clarification of interim status qualification requirements for mixed waste on September 23, 1988 (3). In that announcement, EPA stated that facilities managing mixed wastes in states with basic RCRA authorization would not be subject to RCRA regulations until the state program is authorized to issue RCRA permits for mixed waste. The effective date of a state's RCRA authorization would serve as the date its facilities become subject to permitting requirements for mixed wastes. Currently 14 states are fully authorized for RCRA mixed waste programs. The effective date for states not previously authorized under RCRA to issue permits (i.e., their programs were overseen by EPA) was July 3, 1986.

Mixed waste generators who cannot find off-site management and are forced to store the waste on site must



submit a RCRA Part A permit application to the state no later than six months after the state receives RCRA mixed waste authorization (4). Mixed waste generators currently operating under RCRA interim status for other hazardous wastes must submit a revised Part A application by this date. Some generators are being forced to submit Part A applications because they have one waste stream—mixed waste—for which off-site management cannot be found. These generators are otherwise exempt from permitting because they ship other hazardous wastes off site in less than 90 days. Both parties are potentially subject to the RCRA section 3004(j) storage prohibition for wastes regulated under the Land Disposal Restrictions.

As of April 1990, no commercial waste management capacity was available for mixed waste. In fact, mixed waste has been banned from off-site commercial waste management facilities in certain regional LLW compact states and regional hazardous waste agreement states. [A compact is formed

when a group of states agree to share their waste management capacity with each other. For example, South Carolina now accepts LLW waste from several southeastern U.S. states. When it reaches capacity, North Carolina will begin accepting the region's LLW for management.] The bans have been imposed by the compacts, by state legislation, and/or by facility owners. Such bans conflict with Congress's mandate under Section 104(c)(9) of the Comprehensive Emergency Response Compensation and Liability Act (CERCLA) that requires all states to provide management capacity no later than October 17, 1989, for hazardous wastes generated in their boundaries.

## Estimated number of generators

Little data are available on mixed waste generation. Preliminary results of EPA's 1989 "National Survey of Hazardous Waste Generators" indicate approximately 200 mixed waste generators. Included in this group are teaching hospitals and research and development laboratories that conduct toxicology re-





Marion Deerhake

search. Other mixed waste generators include federal facilities (e.g., the Department of Energy) and power companies.

Even fewer data are available on the quantity of mixed waste generated annually. The OTA report quoted above states that less than 10% of the LLW generated is mixed waste. The fraction of RCRA-regulated hazardous waste that is mixed waste has not been documented.

#### Obtaining a RCRA permit

The three steps required to receive a simple container storage permit for hazardous waste are typically submittal of a Part A permit application (1–6 months); drafting the more extensive Part B permit application (4–6 months); and agency review and decision on the Part B application (1.5–2 years). In total, a mixed waste generator would require 1.9–3 years to receive a RCRA storage permit at an expense ranging from \$25,000 to \$50,000. Estimates are based on 40 CFR Part 270 and discussions with industry and consulting representatives familiar with the RCRA permitting process. In addition, the applicant must make funds available for facility closure and liability insurance coverage of up to \$6 million annually.

The permit applicant's potential liabilities also increase greatly because of the large increase in the number of regulations with which the generator/applicant must comply.

#### Closure during interim status

Assuming off-site capacity becomes available in the next 2–3 years, the generator may close the facility and not seek a final RCRA permit. Generators who choose to close as RCRA interim status facilities are subject to closure regulations under 40 CFR 265 and potentially subject to the Corrective Action Orders of Section 3008(h) of RCRA. EPA's final Land Disposal Re-

strictions (55 FR 22520) grant a two-year variance for radioactive wastes that are mixed with first-third, second-third, and third-third wastes, assuming that adequate treatment capacity will become available after this time. Radioactive wastes that are mixed with spent solvents, dioxins, or California-listed wastes are subject to Land Disposal Restrictions; however, commercial treatment capacity is also currently inadequate. Facilities and ventures are already under development—for example, two facilities in Tennessee.

The five activities that could occur if an interim status facility closed before receiving its final RCRA permit include notifying authorities of closure and submittal of a closure plan (1–2 months); receiving the agency's decision on closure plan adequacy (3 months); performing a RCRA Facility Assessment for site contamination (too variable to estimate time); implementing and completing closure (6 months); and last, certifying closure (2 months). Estimates for a simple container storage facility are based on 40 CFR Part 264 and review of closure plans.

In total, closure of a simple container storage facility with no corrective action measures may take up to 10 months from initial notification to approved certification of closure. The cost of this closure scenario may range from \$2000 to \$5000 depending on the volume of waste stored and rates charged by commercial waste facilities. The cost estimate reflects only the cost of waste removal to off-site management and decontamination of a container storage facility. It does not reflect the cost of administrative responsibilities required to receive certification of closure. However, if contamination were discovered on the generator's site, the cost of closure and time consumed would be unpredictable because the extent of corrective action could vary widely.

#### Recommendations

Two approaches are suggested to relieve both the regulatory and economic burden on the small number of mixed waste generators who require storage permits only for that waste.

- Approach 1—Designate interim off-site storage facilities. Until commercial mixed waste treatment capacity becomes available (within two years), an existing commercial radioactive or hazardous waste storage facility could be designated to store this relatively small volume of waste temporarily for a region or state. This approach is consistent with the intent of Section 104(c) of CERCLA.
- Approach 2—Grant an extension in the Part A permit application dead-

line to applicants for mixed waste management permits only. First, extend the deadline for Part A application submittal to a reasonable date that allows generators to find off-site waste management capacity, or second, grant a deadline variance to the small number of generators who must request a RCRA permit for only the mixed waste.

These actions could be implemented using one of two regulatory vehicles:

- 40 CFR 262.34—This regulation grants extensions to the 90-day accumulation period if "hazardous wastes must remain on-site for longer than 90 days due to unforeseen, temporary, and uncontrollable circumstances."
- 40 CFR Part 268—This regulation grants two-year variances when treatment capacity is unavailable.

If these recommendations are not followed, an authorized state must go through the time-consuming and expensive processing of permit applications and, most likely, interim status closure procedures for these few facilities generating small amounts of mixed waste. Because 1992 permitting deadlines exist for other categories of hazardous waste management facilities [Hazardous and Solid Waste Amendments Section 3005(c)(2)], the mixed waste permit applications will be, chronologically, on the lower end of the list for permit review anyway. Therefore, by the time a final decision is made on mixed waste permit applications (e.g., 1992 at earliest), off-site treatment capacity is likely to be available, and storage permits would be unnecessary in many cases.

#### References

- (1) "Partnerships Under Pressure: Managing Commercial Low-Level Radioactive Waste (Summary)"; Office of Technology Assessment: Washington, DC, November 1989; p. 3.
- (2) *Fed. Regist.* 1986, 51, 24505.
- (3) *Fed. Regist.* 1988, 53, 37045.
- (4) *Code of Federal Regulations*, 1989, 40, 270.10(e).

*Marion Elliott Deerhake is a senior environmental scientist at Research Triangle Institute in Research Triangle Park, NC. She received her B.S. degree in chemistry from Salem College and her M.S.P.H. degree in environmental chemistry from the University of North Carolina at Chapel Hill. She is currently a member of the North Carolina Governor's Waste Management Board's Technical Committee on Hazardous Waste.*