

MIXED WASTE MANAGEMENT: CONCERNS AND ACTIONS  
OF THE STATE OF WASHINGTON

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ABSTRACT

The state of Washington has four principal areas of concern regarding the management of mixed wastes, wastes that are both chemically hazardous and radioactive. The overriding impetus behind these concerns is the potential public and environmental safety impacts posed by the enormous volume of mixed waste present in the state on the Hanford Reservation. Washington has taken action to address both state concerns and national mixed waste questions. The state will continue its efforts in this area and recommends additional work by the NRC and EPA, the federal agencies with mixed waste jurisdiction.

INTRODUCTION

The state of Washington has the dubious distinction of hosting one of the world's largest, if not the largest, assemblages of mixed wastes, wastes that are both chemically hazardous and radioactive. Because most of this collection has been federally "housed" on the Hanford Reservation, the state has had limited access to waste information. Largely as a result of the recent investigation of the Hanford Reservation as a potential high-level waste repository site, the state is now able to identify various mixed waste streams and to begin to assess the magnitude and nature of the potential public health and environmental problems posed by the presence of these wastes.

The purpose of this paper is to identify and describe Washington's principal concerns regarding the management of mixed waste, to discuss the specific actions taken by the state to address those concerns, and to recommend further action to be taken by the state and by others involved in the mixed waste arena. The paper is thus divided into three major sections: identification of concerns, state actions, and recommendations for future action.

BACKGROUND

There are four principal players involved in Washington's efforts to manage commercially produced mixed wastes. The Nuclear Regulatory Commission (NRC) and the agreement state agency, the Department of Social and Health Services, regulate the radiological aspects of the waste. The Environmental Protection Agency (EPA) and the authorized state agency, the Department of Ecology, regulate the chemically hazardous component of the waste. In addition, the U.S. Department of Energy (USDOE) is a player because most of the mixed waste streams at issue are federally produced USDOE wastes.

The two federal statutes which govern the radiological and chemically hazardous elements of a mixed waste are, respectively, the Atomic Energy Act of 1954, as amended (1), and the Resource Conservation and Recovery Act of 1980 (RCRA), as amended (2). The Washington State legislation which implements the

Atomic Energy Act and RCRA is the Nuclear Energy and Radiation Statute (3) and the Hazardous Waste Management Statute (4), respectively.

Federal and state players on each side (radiological and chemical) of the issue are working together to determine how the requirements of all applicable federal and state laws can be met. Congress has considered mixed waste regulation issues, but has not taken action. Instead, Congress has instructed NRC and EPA to combine forces to make "dual regulation" as workable as possible, unless such a goal is deemed impossible.

IDENTIFICATION OF CONCERNS

While protection of public health and environmental safety is the overriding impetus behind the state's work on various issues related to mixed waste management, specific reasons for the state's involvement can be categorized as follows:

Concern about present and future dangers associated with the extraordinary volumes of mixed wastes present on the Hanford Reservation, including those present at the commercial low-level waste facility.

Concern that additional mixed wastes may be entering the state undetected and being disposed at the commercial low-level waste facility.

Concern that mixed waste issues may create roadblocks to states and regions attempting to develop new low-level waste disposal capacity.

A desire to contribute to the resolution of broad mixed wastes questions of regional and national scope.

The most obvious and commanding reason for the state's interest is its concern about public health and environmental impacts from the extraordinary volume of mixed wastes awaiting treatment and ultimate disposal. On the Hanford Reservation in eastern Washington, it is estimated that 65 million gallons of concentrated liquid USDOE mixed wastes are currently

stored in single- and double-shell tanks, that USDOE dilute liquid mixed waste streams are being discharged directly to the soil, and that USDOE solid mixed wastes are buried in landfills.(5) In addition, USDOE mixed wastes are likely to be present in the non-locatable or "lost" waste sites on the reservation.(6) A small percentage of the mixed wastes present on the Hanford Reservation has been buried in the commercial shallow land burial facility for low-level radioactive waste. Although the volume of these wastes is small, they present special potential problems for the state and will be discussed below.

In addition to enormous waste volumes, the remarkable variation of waste types and characteristics and questionable treatment and disposal methods have sparked concern and controversy within the state. Known components of USDOE mixed waste streams, for example, include such diverse hazardous components as corrosive, organic, and inorganic substances. The disposal method used for the dilute liquid mixed waste streams involves discharge of the waste directly to the soil. This method has been identified as the primary cause of contaminated groundwater, yet USDOE continues this practice.(7)

Both immediate and long-term risks associated with Hanford's federal and commercial mixed waste are of importance to the state. Washington is acutely aware of the contamination problems at other closed, commercial low-level disposal sites and is intent on avoiding both the environmental and legal/liability types of problems now plaguing, for example, the state of Kentucky.

The second major reason for the state's keen interest is the hypothesis that mixed wastes are continuing to enter the state as part of the commercial low-level waste stream. Although the commercial disposal facility prohibits mixed wastes, the continued acceptance and disposal of chemically hazardous substances is suspected. Such disposal is unlawful under RCRA and the state's dangerous waste laws because the facility is not permitted as an operating treatment, storage, and disposal (TSD) facility. RCRA requires that such facilities have double liners, leachate collection systems, and other technology designed to prevent any migration of wastes. The commercial disposal site is a "shallow-land burial" facility. Waste is randomly emplaced in unlined trenches which are periodically backfilled and capped with soil and gravel.

The third major emphasis of the state also addresses commercial low-level wastes. Since 1965 the state of Washington has accepted low-level radioactive waste from around the country and in recent years has accepted over half of the nation's annual volumes of commercially produced low-level waste. In recent years, this role has been viewed as an undue burden. To alleviate this situation, the state has worked to pass and to implement the federal Low-Level Radioactive Waste Policy Amendments Act of 1985 (8) which mandates the development of new disposal sites in other regions of the country and establishes a timetable for such development. Mixed waste issues have already appeared to threaten states' and regions' progress toward new site development, in particular, the meeting of the site development milestones.

The fourth major reason for the state of Washington's involvement is the state's desire to contribute to the national resolution of some of the broad policy and regulatory questions that have been raised. These questions include 1) whether NRC and EPA, because both agencies have regulatory responsibilities under the

Atomic Energy Act and under RCRA, respectively, should dually regulate mixed wastes, or should one agency be delegated authority to administer either both regulations or the equivalent of both (in environmental protection terms); 2) whether, if either NRC or EPA regulates mixed waste, there will be adequate or better protection of health and safety and the environment; (3) whether treatment and disposal of mixed waste by the "best available technology" is implementable and how the generation of mixed waste can be minimized; (4) how the mixed waste stream can be better characterized; and (5) how the desirability of lead for use as shielding can be balanced against the undesirability of lead in the environment.

These questions and the other major concerns discussed above are being addressed by Washington in a variety of ways. The following section describes specific state actions in light of the four principal areas of emphasis.

#### MAJOR STATE ACTIONS

To begin to deal with the problems associated with the large volumes of USDOE mixed wastes on the Hanford Reservation, state officials have taken the position that these wastes are subject to regulation under RCRA and under the state's hazardous waste management statute. Because RCRA contains an exemption for byproduct wastes (as defined in the Atomic Energy Act), USDOE is arguing that the bulk of its mixed wastes are not subject to such regulation. The state has explained its position in written correspondence to USDOE and is deciding what formal action(s) should be taken to force compliance. Options being considered include the issuance of an order under the state hazardous waste management statute and a legal suit(s) against the Secretary.

In addition, Washington is pursuing a federal/congressional clarification of these jurisdictional issues. The state has reviewed and is supporting proposed federal legislation which would repeal the byproduct exemption within RCRA. Washington's congressional delegation endorsed a letter to Secretary Herrington from 70 congressional representatives encouraging USDOE to comply with RCRA regulations.

While the state of Washington is working toward eventual regulation of the federal mixed waste streams, the state is currently regulating the commercial mixed wastes present at the low-level waste disposal facility. The site operator has filed with the state a RCRA Part B Application for closure of trenches containing mixed waste. This application is currently under review.

To address potential long-term problems posed by mixed and other wastes at the commercial disposal site, the state is studying the facility's closure and long-term care needs under both routine circumstances and accident scenarios. Investigations will develop performance standards and recommend specific techniques to ensure compliance with both RCRA and the Atomic Energy Act. Once the necessary activities and their associated costs are defined, the adequacy of funds currently held by the state to cover closure and long-term care costs will be re-evaluated. To address the potential liability issues associated with the commercial site, the state is studying the RCRA and Atomic Energy Act liability insurance requirements, and the risks posed by mixed and other wastes, in order to determine what financial assurance mechanisms are necessary.

The commercial low-level waste site operator's Part B Application for closure under RCRA addresses those mixed wastes received at the site before October 29, 1985. To prevent the suspected continued disposal of mixed wastes, and for other reasons discussed below, Washington is instituting a certification/inspection/civil penalty program.

The state's three-part approach, effective August 1, 1987, involves a generator certification, inspection of the waste at the disposal site, and the imposition of civil penalties under RCRA. All waste accepted at the disposal facility must be accompanied by a manifest (shipping papers) which includes a certification statement that wastes contained in the shipment are not regulated hazardous wastes listed in, or exhibiting any of the characteristics described in, RCRA. The certification statement must be signed by an executive officer or formally delegated representative of the waste generator. Both state regulatory authorities (for radioactive and chemically hazardous wastes) and the site operator will randomly inspect waste packages. Inspectors will open the waste container, examine its contents, and send samples of the contents to laboratories for analyses. If regulated hazardous waste is identified, civil penalties will be issued to the generator, waste processor, or site operator by the state's RCRA regulatory authority.

Penalties issued under the Washington State hazardous waste management statute are based on the seriousness of a violation from a human and/or the environmental protection standpoint. The maximum allowable fine is \$10,000 per day per violation. Prior to the institution of this program, the state will supply all firms permitted for low-level waste disposal in Washington with the federal joint EPA/NRC guidance on identification of mixed wastes (9) and the state of Washington's supplemental information on mixed waste management.

Comprehensive measures such as the three-part program discussed above have become necessary in part because large volumes of waste are accepted from generators nationwide. Simpler measures may be sufficient once only in-region waste is accepted. Washington has taken action to help ensure that new disposal sites are developed. The state has worked with NRC and EPA on the question of whether the lack of final EPA siting guidelines for hazardous waste disposal facilities will impede states' and regions' progress, in particular their ability to meet the federal Amendments Act January 1, 1988 milestone, which requires the development of a siting plan. EPA's final siting guidance for hazardous waste facilities is not expected to be issued until September of 1988. Washington has expressed its concern that the relatively small volume of mixed wastes should not be allowed to block development of disposal capacity needed for all commercial low-level wastes and has offered possible solutions. For example, the mixed waste stream could be separated from the commercial low-level waste stream. Other treatment and disposal methods and temporary storage were suggested until an optimal solution is obtained.(10)

Partly in response to Washington's and other parties' concerns, the two agencies have now formally announced that, in their view, the lack of final EPA location standards is not a legitimate reason for states and regions to fail to complete a siting plan by the January 1, 1988 milestone. Compliance is viewed as possible in part because draft EPA siting criteria should be available in September of 1987 and because both the NRC and EPA have offered immediate technical assistance to states and regions.

While concerns that the lack of siting guidelines might legitimately impede meeting of the 1988 milestone appear to have been resolved, other mixed waste issues related to continued progress on site development remain unresolved. While the NRC has stated that it does not find the two liner, leachate collection system required under RCRA incompatible with NRC regulations, the two agencies have yet to produce an engineering design for a facility that would meet both sets of standards. The two agencies are currently working on conceptual designs that would incorporate the liner, leachate system.

In addition to supporting the goal of new site development, the state of Washington hopes to contribute to national solutions of several broad mixed waste issues. The first such issue, whether mixed waste should be dually regulated, has been addressed. It is the state's determination that dual regulation of the Washington commercial low-level waste facility is workable and that it provides the best protection of health and safety and the environment by more comprehensively addressing both sets of concerns. Dual regulation is likely to produce better inspections and problem detection for both radiological and chemical hazards.

A second national question is whether treatment and disposal of mixed wastes by the "best available technology" is implementable and how mixed waste generation can be minimized? Incineration appears to be the best available technology for the majority of mixed waste, preferable to land burial for the protection of health and safety and the environment. In some cases treatment methods or substitution products are available for non-incineratable mixed wastes. However, a commercial incinerator has yet to be licensed in the United States.

The state of Washington has formulated draft regulatory options to be considered.(10) For example, in order to spur development and licensing of a commercial incinerator, NRC could indicate its intent to require incineration for the approximately 80 percent of mixed wastes best disposed in this manner. The remaining 20 percent of mixed wastes could be stored under the direction of the NRC until the optimal disposal method for these wastes is determined.

Other broad interests of the state of Washington include how to better define the mixed waste stream by volume and characteristics. There is currently wide discrepancy in mixed waste volume estimates. While the often-quoted Brookhaven Report (11) judges mixed waste as 3 percent of the commercial waste stream, others have estimated that the percentage is much higher. Working with the Northwest Interstate Compact, the state plans to survey generators, brokers, and processors in the seven party states to determine volumes, characteristics, and current treatment and other management methods for the region's commercial mixed waste streams. Investigations beyond this initial step are necessary and are recommended below.

While Washington can survey commercial mixed wastes in the Northwest Region, a national assessment is needed. The state of Washington is strongly encouraging the states of South Carolina and Nevada (the other two states with commercial low-level waste disposal facilities) to adopt the same or a similar program of mixed waste certification, inspections, and civil penalties. One goal of such a program is to "force the issue" in order to better determine the magnitude of the nation's mixed waste dilemma. Problems caused by the lack of a disposal option for commercial mixed wastes are not immediately apparent.



With few exceptions, generators have not indicated to state officials that a problem exists, despite all three disposal sites' prohibition on mixed wastes.

Finally, the national question of the acceptability of lead for disposal is being considered. At least three categories of lead-containing mixed wastes require attention: uncontaminated lead in use as shielding; surface-contaminated lead; and activated lead.

Because lead in the first category is uncontaminated and serving a useful purpose, it has been argued that this lead is not a "waste" and therefore not subject to RCRA. The state, however, views the key question in this case as not whether the lead is technically a "waste," but whether it poses a hazard once buried and in contact with the environment. Because of the unique value of lead for shielding, the state is investigating treatment methods to render shielded packages acceptable for disposal.

Treatment methods are also being researched for the second category of lead, surface-contaminated lead waste, and may include encasement in concrete and steel. However, surface-contaminated lead may also be decontaminated and recycled. The state is considering in what cases this management practice should be implemented and what treatment should be required for the disposal of removed surface contamination.

The third category, activated lead, generally cannot be decontaminated or recycled. There is a phenomenal volume of activated lead on the Hanford Reservation. It has been estimated that hundreds of tons of both activated and surface-contaminated lead await disposal. Treatment methods for the commercial low-level waste stream's activated lead need to be determined.

#### RECOMMENDATIONS FOR FUTURE ACTION

As the state becomes increasingly involved in regulating commercial mixed wastes and preparing to regulate federal mixed wastes, it should focus its efforts as follows:

Carefully audit the problems and successes associated with dual regulation of the commercial low-level waste disposal site, and convey the results of such audits to NRC and EPA, South Carolina and Nevada, unsited states and regions, and others.

Encourage NRC and EPA to require the best available treatment and disposal methods and to require the minimization of waste streams through such practices as the use of substitution products.

Work to better define the mixed waste stream, including documenting problems detected as a result of the state's certification, inspection, civil penalty program. Combine Northwest region data with information from South Carolina and Nevada to begin to develop a national problem definition.

Continue work on lead and other special disposal problems.

Continue a close working relationship with NRC and EPA, with South Carolina and Nevada, with unsited states and regions, and with the generators, brokers, and processors of mixed waste.

Washington should also encourage NRC and EPA to continue their efforts in a number of areas:

Request that the federal agencies continue their work to prevent roadblocks to the development of new disposal capacity.

Request from NRC a study designed to expand upon the Brookhaven Report and define in more detail mixed waste streams throughout the nation. Such a study might include actual on-site visits/inspections of NRC licensees.

Impress upon NRC, EPA, and USDOE that additional research and guidance on the lead issue is both an immediate and a national need.

#### CONCLUSION

While Washington is addressing a number of concerns posed by the presence of and probable continued acceptance of mixed wastes within its borders, the state is also speaking to broad, national mixed waste issues. Efforts to resolve questions related to the disposal of wastes that are both chemically hazardous and radioactive are ongoing, the results of which will be shared with other states and regions.

Future action by the state should emphasize continued close cooperation with other actors such as EPA and NRC and probe the more pressing issues associated with dual regulation, optimal waste treatment and disposal methods, mixed waste stream definition and special disposal problems. The federal agencies should work to prevent roadblocks to new disposal facility development, to further characterize the nation's mixed waste streams; to require the best available treatment, disposal, and waste minimization methods; and to provide guidance on lead and other unique disposal questions.

The states and the federal agencies have already made significant progress on several major mixed waste issues. The challenge ahead is to continue to make timely advancements of high quality.

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