

# MIXED WASTE MANAGEMENT IN WASHINGTON AND THE NORTHWEST COMPACT REGION

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## ABSTRACT

The state of Washington's concerns about the management of mixed waste have evolved over the past year. One concern that will receive increasing attention is the Northwest Compact Region's need to plan for disposal of its own mixed waste. An informal survey of the region's potential mixed waste generators has indicated that mixed waste volumes are low. However, the opening of a disposal facility may result in increased waste volumes. A preliminary proposal for such a facility has been reviewed by the federal and state agencies that dually regulate mixed waste. Initial conclusions reached by the regulators are presented.

## INTRODUCTION

The purpose of this paper is threefold: to discuss the involvement of mixed waste concerns of the state of Washington and the Northwest Interstate Compact over the past year, to report the results of a mixed waste survey of the Northwest Compact region, and to report on the status of a proposal to develop a mixed waste disposal facility in Washington state.

Washington is interested in a national, long term, lasting solution to the mixed waste problem. The state believes that dual regulation of wastes that are both chemically hazardous and radioactive is a realistic approach, and is committed to coordinating the two sets of regulators. While the state is keenly aware of the national pressure for a solution, it cannot downplay environmental protection requirements. Encouraged by the progress of the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA) on this issue, the state wishes to help accomplish the goals set forth in both sets of applicable regulations.

## EVOLVING CONCERNS ABOUT MIXED WASTES

The question of how large a problem is posed by the generation of mixed wastes remains unanswered. This is largely because of a lack of information about mixed waste volumes, characteristics, current treatment methods, storage practices and unauthorized disposal. This paucity of knowledge makes it difficult for solutions to be formulated. Policymakers and lawmakers need additional information to make sound decisions.

Many concerns of a year ago remain today (1). Extraordinary volumes of mixed wastes are still present on the Hanford Reservation, and still await treatment and disposal. Within the last year, the U.S. Department of Energy (USDOE) has declared these waste streams as regulated under the Resource Conservation and Recovery Act (RCRA) and are seeking the applicable permits from the state. This action represents to the state important progress

that was achieved without having to proceed with the litigative measures discussed a year ago. The need for extensive cleanup and disposal remains, however.

Concern about mixed waste at the commercial site, both the wastes already documented as buried and the possible continued unauthorized disposal of this waste remains. The site, which uses shallow land burial in unlined trenches as the principle disposal technology, does not meet the minimum requirements for sites accepting chemically hazardous wastes. For example, the state has determined that the site's existing groundwater monitoring system is deficient and does not meet the federal requirements of RCRA.

One concern of a year ago may be largely resolved; that mixed waste issues may create roadblocks to states and regions attempting to develop new disposal capacity. With the issuance of joint NRC/EPA guidance on siting of mixed waste facilities (2) and mixed waste facility conceptual design (3), and with the NRC/EPA statement that the management of this waste stream is not a legitimate cause for delay, unsited states and regions don't appear to be facing the roadblocks envisioned a year ago. It is interesting to note, however, that of the eleven siting plans submitted to comply with the Low-Level Radioactive Waste Policy Amendments Act's 1988 site development milestone, only four plans address mixed waste disposal.

A concern that will receive increasing attention is the Northwest Compact's need to plan for disposal of mixed waste generated within the region. The Compact must either develop its own disposal capability or contract with another state or region by January 1, 1993. As an initial step, the compact has surveyed potential mixed waste generators within the seven states' borders.

## REGIONAL MIXED WASTE SURVEY

An informal, confidential survey of potential mixed waste generators in the seven states of the Northwest Compact was conducted by compact staff (4). The names of generators of low-level waste with current site use permits to

dispose of waste at the commercial site in Washington were crossreferenced with the names of generators of hazardous waste with EPA permits (5). A total of 45 facilities in the Northwest Compact region hold both permits. These companies were contacted by telephone and asked the following questions:

Do you have any mixed low-level wastes currently in storage that will require disposal? If so, what is the approximate volume and nature of the waste?

What is your approximate rate of currently generated mixed waste?

Do you generate wastes which you're not really sure about, i.e., which could be mixed waste? Approximately what would that volume and rate be?

Do you know of any labs that could test these wastes for you?

At what future projected rate do you expect to generate mixed low-level waste?

Do you have any major concerns or comments about this issue right now?

A survey of this type on mixed waste has obvious and important limitations. Generators have a disincentive to report to the state or other regulators that they generate and hold mixed waste or suspected mixed waste. Such waste, according to RCRA, may be stored on site for a maximum of 90 days, and cannot be legally disposed until a mixed waste disposal facility is developed. Nonetheless, most generators were willing to discuss the issue, and their particular situation and experience.

Of the 45 generators identified, we were able to contact and received responses from 40. Of these, 2 are utilities, 15 are industrial facilities, 12 are academic institutions, and 14 are medical facilities. Of all the companies surveyed, thirteen indicated that they generate no mixed wastes. All of the others generate at least some waste that is both chemically hazardous and radioactive. These 27 companies provided estimated annual volumes of waste in permanent storage, in temporary storage, currently produced and/or projected to be produced. The annual volume estimates provided (in cubic feet) are as follows:

In permanent storage: 0.3, 0.3, 0.4, 7, 7.5, 27.3, 50, 80, 100, 272.8

In temporary storage:

Being held for decay: 1.2, 2.7, 27.3, 82.5, 113.7 (8 additional generators reported that they hold waste for decay, but did not report volumes)

Being held for testing, treatment or dilution: 700, 15,000

Current production: 0.1, 0.3, 0.3, 0.4, 0.7, 1, 3, 7.5, 10.2, 50, < 200, 700, 15,000

Future production: 0.1, 0.3, 0.3, 0.4, 0.7, 0.7, 1, 5, 7.5, 10.2, 50, < 200, 700, 15,000

The kinds of mixed wastes generated by the 27 companies were identified as:

- Alcohol
- Chromium waste
- Empty contaminated drums
- Evaporator bottoms
- Freon
- Incinerator ash
- Lead mixtures
- Lead shielding
- Lead shielded gauges and scales
- Organic corrosives
- Transuranic waste with toluene
- Petroleum cake and zirconium sand
- Scintillation fluids
- Yellowcake and dry LSA waste which is EP toxic

Sixteen facilities indicated that they rely on brokers to take care of their mixed wastes. This number is probably low as we did not ask if brokers were used. Most of the major brokers in the United States were also contacted and their perspectives are discussed below. Most generators of mixed wastes also use decay, treatment, dilution, or other methods to reduce this waste stream.

One purpose of the survey was to bound the range of possible volumes of mixed waste the region will have to deal with. Other estimates may be available as a result of an Electric Power Research Institute (EPRI) survey currently underway. The total annual production volume indicated by the survey is 16,173.5 cubic feet, with 15,000 cubic feet of that amount being generated by one entity. The estimated future annual generation is 16,176.2, again with 15,000 cubic feet from one generator. The amount of mixed waste currently being held in permanent storage is 272.8 cubic feet. The volume in temporary storage, including that being decayed or treated is 15813.7, with 15,000 cubic feet being treated by one generator. We were interested in the total 1987 volume of low-level radioactive waste disposed in Washington by the 45 companies identified. The computerized system of the site operator only showed that 24 of these entities had disposed of waste in 1987, in part because the system does not allow one to "see through" all brokers.

The 1987 volume of low-level radioactive waste disposed by the 24 companies is 110,443.7 cubic feet.

With the exception of the 15,000 cubic feet of mixed waste reported by one generator, volumes reported are small. Because much of this mixed waste is altered to either radioactive or chemically hazardous waste, or is handled in some other way unknown to us, the volume of waste being held for eventual disposal is even smaller. The questions of whether these survey volumes are deceptively low is discussed below in relation to the possible development of a mixed waste disposal facility.

In response to our question about generators' use of outside labs to test waste streams to determine if they are mixed, 2 companies use outside labs, 1 company uses both outside services and tests inhouse, and 23 use their own facilities to test.

Several generators indicated that their volumes would increase if a disposal facility were available. For example, medical facilities that have changed to the less toxic, aqueous scintillation cocktails may return to using the organics, if they could be readily disposed, because they perform better. Other examples of how the lack of disposal capacity for mixed waste has brought about change were provided by interviewees. Recovery systems might not have been developed and increased processing not undertaken. Processing of scintillation cocktails and the decontamination of lead were reported to result in increased occupational hazards. Concern was also expressed about the hazards and lack of adequate regulation of wastes that are both biologically hazardous and radioactive.

Most of the major low-level radioactive waste brokers (collectors and processors) in the United States were contacted to ask about their handling of the mixed wastes identified in our survey, and to obtain their knowledgeable perspective on mixed waste issues in general. Much of the scintillation vial disposal problem is being handled by incineration provided the isotopes are decayable. Some types of lead can be decontaminated and certain other wastes can be diluted. Mixed wastes that remain legally homeless include organic solvents, transuranics mixed with toluene, acetone, scintillation fluids with longer lived isotopes, plutonium-contaminated liquids (for example, environmental monitoring samples from the closed Maxey Flats disposal site), and certain oils.

In part because of their high BTU values, solvents are likely to eventually be disposed by burning as fuel. Solutions for other orphan mixed waste are not as readily determined or predictable. Most brokers don't think the mixed waste problem is going away, or that it is any less of a concern now than it was a year ago. The majority of those contacted also believe that if a disposal facility were to open, mixed waste would "come out of the woodwork." Factors affecting the ex-

tent of this phenomenon are likely to be the cost of disposal and the perceived liability picture, i.e. whether potential future liability will be greater as a result of burying this waste than what would result from some other form of treatment or disposal.

#### **PROPOSAL TO BUILD MIXED WASTE DISPOSAL FACILITY IN WASHINGTON**

The current site operator of the commercial low-level waste facility in Washington has submitted a proposal to the state to expand its operation to include mixed waste disposal (6). State and federal agency representatives who dually regulate mixed waste met to consider dual permitting and other aspects of such an undertaking. Although the proposal was very preliminary in nature, and all parties were in agreement that a more detailed plan including a facility design would be necessary in order to respond adequately, some determinations came out of this meeting. The most significant conclusions are:

A mixed waste facility may be licensable by the NRC within 15 months of submission of a "uniformly excellent" application.

A mixed waste facility may be licensable by the state's RCRA authority within one to two years of submission of an excellent application, if an ongoing dedicated effort is made by the applicant.

Both sets of regulators are willing to attempt to streamline the process but not to compromise on standards or requirements. For example, the groundwater monitoring requirements of RCRA must be met for such a facility.

If a company wants to speed up the application process, one of the first items to address should be groundwater monitoring. This data must be collected for a set period of time before operation could commence.

The process may be delayed to the extent an applicant deviates from the joint design concept developed by NRC and EPA.

A single application that would be reviewed by both sets of regulators would be acceptable provided it addresses both sets of requirements.

Unresolved aspects of a mixed waste facility were also discussed by the regulators. Inspection issues include the feasibility of sampling of highly radioactive packages, non-homogeneous waste, supercompacted waste, and the complexities involved in sampling resin wastes.

From the state of Washington's perspective, without basic data on what mixed waste volumes and forms would be accepted at such a facility, policy decisions are difficult. One concern is that mixed waste will start to "come out of the woodwork" once a facility opens, as several major waste

brokers have indicated. Another concern is that the opposite case may be true, that national volumes of mixed waste will be so low that only one national facility will be required. If this is the case, the first facility to open may be the only facility to open. Finally, a lack of information on the interactions of the chemical and radiological components of the waste and their impact on the disposal environment paints additional uncertainty into the picture.

The next step in this process is for the site operator to develop a detailed proposal addressing both sets of requirements. The process of developing a mixed waste facility should become easier once the planned joint NRC/EPA guidance on permitting and licensing of a mixed waste disposal facility, and on enforcement and inspection, is available.

### CONCLUSIONS

The state of Washington remains concerned about commercial and federal mixed waste issues. More information about mixed waste volumes and characteristics is still needed by policymakers and lawmakers. A concern that will receive additional attention is the Northwest Interstate Compact's need to determine how it will take care of its own mixed waste.

To begin to assess the magnitude of this need, compact staff conducted an informal survey of the region. Forty five facilities were identified as potential mixed waste generators. Twenty seven of 40 companies contacted indicated that they generate mixed wastes. The estimated volumes of these waste streams are low.

If a disposal facility opens, mixed waste volumes may increase and waste volume reduction and treatment may receive reduced emphasis. Several major low-level waste brokers were contacted and the majority indicated that mixed wastes have not become any less of a concern than they were a year ago, and that if a facility opens mixed waste would "come out of the woodwork."

A preliminary proposal to develop a mixed waste disposal facility in Washington has been submitted to the state, and to the dual regulators of mixed wastes. Federal and state regulators reached some initial conclusions about the

process of developing such a facility, but agreed that a much more detailed proposal was necessary before the actual review process could be undertaken.

Policy decisions regarding the proposed facility are more difficult to make without reliable data on what waste volumes and forms would require disposal. Additional unknowns about the national need for mixed waste disposal and about the interactions of chemical and radiological components in the disposal environment further complicate decisionmaking.

### REFERENCES

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2. U.S. Nuclear Regulatory Commission and U.S. Environmental Protection Agency, "Combined NRC-EPA Siting Guidelines For Disposal of Mixed Low-Level Radioactive and Hazardous Waste." (1987).
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4. The survey was conducted in February, 1988 by Mr. Philip Greer and Mr. John Ridgway of the Low-Level Radioactive Waste Program, Department of Ecology, State of Washington.
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