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Progress on Integrating Environmental Restoration Data
into Mixed Waste Updates

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ABSTRACT

The Federal Facility Compliance Act required the Department of Energy to compile specific information on the volumes, characteristics, and treatment plans for mixed wastes, and to provide this information to the Environmental Protection Agency and affected states. The initial format for reporting this information was developed largely on the basis of operations wastes. Although this format is acceptable for stored environmental restoration wastes, it was found to be poorly suited for reporting wastes that could be generated by future cleanup activities, many of which have not yet been well defined. Modifications to the process initially used to report restoration wastes were made to allow them to be reported in a manner that more accurately reflects uncertainties inherent in such estimates. This revised approach allowed for the smooth integration of data for restoration wastes with those compiled by the waste management team for mixed waste inventory updates.

BACKGROUND

For the past two years, the Department of Energy (DOE) has been involved in an intensive effort to collect and consolidate information on mixed wastes from both operating facilities and inactive sites, to satisfy reporting requirements for the Federal Facility Compliance Act (FFCA). This information is being provided to the Environmental Protection Agency (EPA) and affected states, and it includes descriptive data on both stored and anticipated wastes, as well as treatment plans for those wastes. The approach and structure of the reporting mechanisms for this mixed waste information have evolved during this time, with the goal being a comprehensive framework that can be used for future updates.

Although environmental restoration (ER) wastes account for a major portion of the total waste volume anticipated from DOE activities over the next 30 years, the initial structure for reporting mixed waste information was developed primarily on the basis of operations waste. During preparation of the mixed waste inventory report and accompanying data bases, several issues were raised with regard to incorporating ER information into that format. Most problems arise from the fact that specific ER activities that will be conducted in the future are not yet known for most sites, so waste projections (let alone mixed waste projections) are preliminary at best. Thus, considerable uncertainty is associated with the plans and costs being developed for treatment facilities based on these early estimates — many of which involve conservative assignment to the mixed waste category, absent characterization data that may not be available for several years.

It is important to recognize that these wastes may not be generated at all, depending on site-specific cleanup decisions. In-place responses such as capping or access restrictions are being evaluated for certain areas at a number of ER sites, so some contaminated environmental media such as soil and groundwater at these sites may never become waste. The staged nature of the decision-making process for these sites makes it difficult to provide full information on waste volumes and characteristics, and subsequent treatment plans, prior to the establishment of formal decisions that are developed from the input of many stakeholders — including EPA, the states, and affected communities.

Problems also arise in projecting information for secondary waste streams, which include personal protective equipment that will be worn by remedial action workers, as well as filters, sludges, and spent resins from the anticipated treatment of multiple waste streams. Additional difficulties are associated with

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data on wastes that may be generated by decontamination and decommissioning activities, which are currently being tracked by various programs and represent a considerable source of uncertainty in the volume projections for DOE mixed wastes. A similar issue is involved in tracking the transition of wastes from environmental restoration to waste management responsibilities. Further administrative issues include the staggered timing of updates for the mixed waste data base versus the site treatment plans (conceptual, draft, and proposed), and the unavailability of specific ER contacts in the field to help coordinate with waste management (WM) counterparts. Several of these issues and their resolutions are discussed further below.

ISSUES AND RESOLUTIONS

Level of Detail. Information was collected for the mixed waste inventory report (MWIR) data base at the "waste stream" level, and completion of a 30-page questionnaire was requested by the WM team for each waste stream. This level of detail was not available for ER wastes, especially for the materials that are projected to be generated, because characterization and response planning activities are ongoing at the restoration sites.

For stored ER wastes, this issue was addressed by completing the questionnaire to the extent information was available, using standard responses in many cases (for example, with regard to treatment plans where decisions had not yet been finalized and the options were therefore still being assessed). The waste streams were defined as single containers or a group of containers with wastes of similar physical properties and contaminant conditions. Although many ER wastes consist of heterogenous mixtures of contaminated media that do not fit easily into standard categories, they were assigned to the most appropriate treatability group code that had been developed by the WM team to facilitate summary roll-ups and integrated planning. The original questionnaire has also been revised and shortened considerably, to focus on key data needs for FFCA reporting.

For projected ER wastes, a simplified profile sheet was developed to capture on a single page the information requested by the FFCA, to the extent it was available. Standard responses were provided for many entries (such as "good management practices" for the waste minimization activities). In some cases, no volume estimates could be provided yet, but a profile sheet was prepared to present other information (such as the projected source and type of waste) and also to serve as a placeholder in the event that a given waste stream is generated by a future ER activity that is currently under consideration at the site.

Stage of Site Decision-Making Process. A considerable amount of information on treatment plans and waste projections was requested by the WM team for each waste stream. To provide these data, final decisions on the remedies that affect waste generation and treatment would have to be available for each site.

Comprehensive decisions have not yet been made on the remedies to be implemented at most ER sites. Thus, the eventual fate of the variety of contaminated materials typically found at a site — which may or may not involve the generation of mixed waste — cannot reasonably be projected prior to the evaluation of response options and the receipt of input on proposed actions from the communities, states and EPA regions involved. To do otherwise, i.e., to provide details that presume a certain course of action, might imply that the decision-making process was being circumvented at these sites, and that is not the case. This issue was addressed by caveating the information provided for ER mixed wastes as preliminary. In addition, some responses were simply noted as "unknown" or "not available" at this time, and others included standard language (see examples above) that reflected the predecisional stage of the process.

Consistency with the Site Treatment Plans. Concurrent with the collection and presentation of information for the MWIR and its updates, sites have also prepared several evolving versions of site treatment plans (STPs) for issuance to EPA and the states according to an established schedule. Issuance of the MWIR and its updates has not followed this same schedule, so data differences have occurred and the inconsistencies have been questioned.

The development of characterization and planning information at ER sites is an ongoing process, and data will change over time. To resolve the issue of apparent inconsistencies associated with different reporting periods, the schedules of the MWIR data base updates and STP revisions are being synchronized. Closer coordination between the two reporting activities is also reducing duplicative data entry efforts. For example, information from the 1994 MWIR data base is being preloaded into the format for the 1995 update, as supplemented by information from the current STP, so field personnel need only change those entries for which new information has been developed since the most recent reporting of mixed waste data.

Integration of ER and WM Treatment Plans. Information is being collected for the FFCA on treatment plans for mixed wastes from both operating (WM) facilities and restoration (ER) sites. Using a single reporting structure developed from an operational perspective did not accommodate some of the ER considerations, such as the evaluation of bench-scale and pilot-scale facilities and the possibility of multiple feeds that have not yet been well characterized, or in some cases even identified.

To address this issue, additional clarification and flexibility have been incorporated into the treatment facility questionnaire developed by the WM team for FFCA reporting purposes. Treatment plans for mixed waste originate at the site level, whether it is an ER or WM waste. Coordination between the respective elements at sites where both are present has helped integrate the treatment planning activities for the FFCA updates.

SUMMARY

Resolutions continue to be developed for these issues, and progress is being made toward establishing a workable structure for mixed waste reporting. Successful integration of ER mixed waste data into the overall FFCA reporting framework is critical, especially given DOE's plan to provide further updates of mixed waste information to EPA and the states. Applying an approach that acknowledges the preliminary nature of ER waste projections is helping to solve some of the problems associated with earlier mixed waste reporting for the FFCA. Also, close coordination between the ER and WM teams has helped accommodate the flexibility needed to reflect differences in the two programs and has increased the consistency of information being presented for DOE mixed wastes from operations and restoration activities.