H.7 Potential Impacts of Sabotage or Terrorist Attack

This section addresses the environmental impacts associated with potential sabotage or terrorist attacks on shipments of solid waste to and from the Hanford Site. The Nuclear Regulatory Commission (NRC) has established regulations designed specifically to protect the public from potential terrorist attacks on certain types of radioactive material shipments (see 10 CFR 71). These requirements are intended to minimize the possibility of sabotage and facilitate recovery of shipments that could come into control of unauthorized persons. The requirements minimize the impacts of malevolent acts during transport of the most dangerous types of radioactive materials, including spent nuclear fuel and special nuclear materials that could be used to construct nuclear weapons. The NRC rules require, for example, advance route approval, advance arrangements with local law-enforcement agencies along the route, advance notification of states, escort requirements, and onboard communications equipment. These rules apply to offsite shipments in the general-public domain when conditions along transport routes cannot be controlled.

None of the solid waste materials covered by this EIS are required to implement special safeguards and security provisions. In general, the solid waste materials have low radioactivity levels relative to spent nuclear fuel and none qualify as special nuclear material that would require special safeguards and security considerations.

In addition to the physical-protection requirements in 10 CFR 73, the shipping containers themselves provide a measure of protection. Type B accident-resistant packaging systems are required for the most hazardous shipments, such as TRU waste and certain high-quantity LLW and MLLW shipments, as well as ILAW containers. These packaging systems, which are designed to withstand severe mechanical and thermal environments, provide a significant amount of protection from terrorist attacks. Lower hazard materials, including most LLW and MLLW shipments, do not require accident-resistant Type B packages. They are shipped in Type A packages. However, the less hazardous shipments are not attractive terrorist targets because they would not involve a high-profile symbol of the United States nor would a successful attack produce a large number of immediate fatalities. The latter observation is based on the results of an assessment of radioactive releases from a spent nuclear fuel shipping cask subjected to an attack using a high-energy device (Luna et al. 2000). The maximum individual dose from such an event involving a spent-nuclear-fuel shipping cask, which carries orders of magnitude greater radioactive material than typical solid waste shipping containers, was well below that which would cause an immediate radiation-induced fatality.

An additional element to consider is that most of the shipments of radioactive waste covered in this EIS are within Hanford Site boundaries. Hanford is a controlled-access facility that is protected by various security measures, for example, security guards and visual surveillance systems. Onsite shipments of solid waste would be protected by these same systems, which lessens the likelihood of a successful terrorism incident.

To provide some perspective on the potential impacts of a terrorist attack on a shipment of radioactive materials addressed in this EIS, the consequences of the most severe accident (i.e., Severity Category VIII), involving a spent nuclear fuel shipment, modeled in the RADTRAN accident analysis, were determined.

The results indicate that such an attack, if conducted successfully in an urban area, could result in a population dose of about 48,000 person-rem. Such a population dose would result in about 24 excess LCFs in the exposed population. If the attack occurred in a rural area, the consequences would be much lower, approximately 160 person-rem, and 0 excess LCFs. These are conservative estimates because they assume that the attack results in complete loss of containment and interdiction, and other measures that would lessen the impacts are not accounted for. Shipments associated with waste evaluated in this HSW EIS would have lower radionuclide inventories and would be expected to have correspondingly smaller consequences.

Because of the terrorist attacks on September 11, 2001, DOE and other agencies are reviewing the physical-protection requirements for shipments of radioactive materials. Any findings and recommendations from this re-examination would be incorporated into DOE's plans for shipping solid waste materials to, from, and within the Hanford Site.

H.8 Comparison with Waste Management Programmatic Environmental Impact Statement

The *Final Waste Management Programmatic Environmental Impact Statement* (WM PEIS, DOE 1997b) evaluated the nationwide impacts of managing four types of radioactive waste (LLW, MLLW, TRU waste, and high-level waste) and hazardous waste. The purpose of the WM PEIS was to provide part of the basis for DOE decisions on programmatic configurations of sites for waste treatment and disposal activities. A Record of Decision (ROD) on management of LLW and MLLW was issued on February 25, 2000 (65 FR 10061). DOE decided, among other things, to continue onsite disposal of LLW at four DOE sites and to make Hanford and the Nevada Test Site (NTS) available to all DOE sites for disposal of LLW and MLLW. The HSW EIS and WM PEIS analyzed similar configurations for treatment and disposal of LLW and MLLW and used similar methods for calculating transportation impacts. The main difference between the purposes of the HSW EIS and the WM PEIS is that the former seeks a site-specific decision on management of LLW, MLLW, and TRU waste, whereas the latter sought decisions on broader, nationwide configurations of sites for management of these and other radioactive wastes.

Given the similarities in scope and analytical methodologies between the HSW EIS and WM PEIS, it could be asked if the impacts calculated in both documents are comparable. A comparison was made between the transportation impacts calculated in the WM PEIS and HSW EIS in an effort to understand what the differences are, if any. The WM PEIS information was taken from the *Information Package on Pending Low-Level Waste and Mixed Low-Level Waste Disposal Decisions to be made under the Final Waste Management Programmatic Environmental Impact Statement* (DOE 1998) that was developed to support the LLW/MLLW Record of Decision.

This exercise led to the following observations. First, the WM PEIS scope was limited to 20 years whereas the HSW EIS covers the lifecycle of the Hanford Site Solid (Radioactive and Hazardous) Waste Management Program (through 2046). Consequently, the LLW and MLLW volume projections are significantly different, leading to differences in the transportation impacts. In addition, the WM PEIS was published in 1997, so the waste-volume projections are several years older than the waste-volume