

Transportation Risk Assessment

EVS has developed and applied a comprehensive assessment approach to estimate the risks associated with transporting hazardous chemicals and radioactive materials. The approach addresses risks unique to radioactive and hazardous waste and those that result from the transportation operations themselves. EVS has also led development of a transportation risk assessment handbook for the U.S. Department of Energy (DOE) National Transportation Program (NTP).

PROBLEM/OPPORTUNITY

The continued operation of DOE facilities, cleanup of contaminated sites, and dismantling of weapons production facilities are expected to generate thousands of tons of radioactive and hazardous waste over the coming decades. In addition, DOE possesses a considerable amount of high-level waste from defense and research activities and is obligated to accept spent nuclear fuel from 119 commercial nuclear power reactors in the near future. DOE is responsible for treating, storing, and disposing of these materials.

Transporting radioactive and hazardous wastes between facilities is an important part of the waste management alternatives DOE is considering. Such transport activities present a real and perceived risk to workers and the public along shipment routes, both during routine operations and if an accident were to occur. As a result, waste transport has become a controversial and publicized issue and is a major risk factor that must be considered in DOE's decisions.

APPROACH

EVS developed a comprehensive approach for estimating the risks from waste shipments of all types within the DOE complex. The approach relies on the application of a set of risk assessment models, including one developed by EVS specifically to make the set complete and responsive to public concerns and DOE commitments.

EVS developed the RISKIND computer code to analyze radiological consequences and health risks to individuals and collective populations from exposures associated with transporting spent nuclear fuel and other radioactive materials. The code was designed to address areas of concern to specific

individuals or population subgroups and includes numerous user-friendly features to facilitate its use by decision makers and others.

RESULTS

EVS's integrated approach has been established as the DOE standard for transportation risk assessment. It has been used to help make decisions for several environmental impact statements (EISs), including the DOE Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs EIS, the Foreign Research Reactor Spent Nuclear Fuel EIS, the Waste Management Programmatic EIS, and the Depleted Uranium Hexafluoride EIS. It has also been used in supporting studies for both the Waste Isolation Pilot Plant and the proposed Yucca Mountain repository.

Use of RISKIND as a risk communication tool has been expanding. A user-friendly Windows interface has been added to RISKIND to enable interested stakeholders to address specific concerns. The models can answer such questions as "What if I live next to a site access road?" or "What if an accident happens near my town?" The models are helping DOE become more responsive to stakeholder concerns.

EVS has also taken steps to help improve the transportation risk assessment process across the DOE complex. It is part of DOE's Transportation Risk Assessment Working Group (TRAWG). Established under the auspices of NTP, TRAWG seeks to increase the efficiency and effectiveness of transportation risk assessments. Its goals include reducing preparation time and cost, ensuring technical adequacy, promoting consistency of

assessments among DOE programs, and expediting the review and approval process. Toward this end, EVS staff have led the effort to produce "A Resource Handbook on DOE Transportation Risk Assessment." This document is expected to serve as a primary reference, providing detailed guidance to those responsible for conducting transportation risk assessments.

FUTURE

EVS will continue to provide technical support and assistance to DOE on issues associated with transporting radioactive and hazardous materials. Involvement with stakeholders, such as states potentially traversed by large numbers of shipments, is expected to increase and involve activities such as conducting RISKIND training workshops in affected communities. In addition, the NTP is committed to updating the transportation risk assessment handbook annually and providing access to the information via the Internet.

COMMUNICATION OF RESULTS

The resource handbook on transportation risk assessment will be available through DOE's NTP in Albuquerque, New Mexico, in late spring 1999. Access to the handbook will also be available through the NTP's web site at <http://www.ntp.doe.gov> and through the DOE Center for Risk Excellence at riskcenter.doe.gov.



Transportation is a major risk factor in DOE waste management decisions.