

ES&H Division
SLAC-I-720-0A86Z-002-R000

On-site Hazardous Materials Transportation Safety Document

*Stanford
Linear
Accelerator
Center*



SIGNATURE LIST

Document Author: <u>Olga Ligeti</u>	
Owner Group: <u>ES&H Division</u>	
Adoption of (X) new or () revised document or () document deletion reviewed, and approved by Owner Group Leader:	
_____ Jim Allan, Field Operations Group Leader	Date
_____ Butch Byers, CGS Acting Department Head	Date
_____ Mike Grissom, ES&H Assistant Associate Director	Date
_____ Olga Ligeti, RWM Group Leader	Date
_____ Helen Nuckolls, EP Department Head	Date
_____ Yolanda Pilastro, WM Section Leader	Date
_____ Sayed Rokni, ES&H Acting Associate Director	Date
_____	Date

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<p>(X) The following individuals:</p>	
Jim Allan	Yolanda Pilastro
Butch Byers	Sayed Rokni
Mike Grissom	
Olga Ligeti	
Helen Nuckolls	

TABLE OF REVISIONS

REVISION #	DATE	SECTION(S)	REASON FOR REVISION
R000	02/24/2006	All	Finalized new document

1 OVERVIEW

1.1 INTRODUCTION

The Department of Energy (DOE) Order 460.1B mandates that onsite transfers of hazardous materials be performed in accordance with either Title 49 *Code of Federal Regulations (CFR) Parts 171 to 180* or a site specific Transportation Safety Document (TSD) which describes the methodology for achieving equivalent safety. Although 49CFR171.1(d)(4 & 5) clearly exempts from regulation the on site transport of hazardous materials at the Stanford Linear Accelerator Center (SLAC), this document establishes the process by which SLAC complies with the Department of Energy (DOE) requirements as outlined in Order 460.1B relative to the safe transportation of hazardous materials on site.

1.2 SCOPE

This document applies to the vehicular transportation, within geographically contiguous SLAC property, of hazardous materials, substances, and wastes which if transported in commerce or a public road would be subject to the requirements of 49 CFR 171-180. Hazardous materials include chemical, biological, and radiological materials, substances or wastes. Transportation shall be performed in a manner which minimizes risk to the health and safety of employees, the public and the environment.

1.3 SITE DESCRIPTION

For the purposes of this document, on-site refers to all property within the contiguous fenced area accessed through the Sand Hill Road and the Alpine Road gates. SLAC's property is completely within DOE leased, Stanford owned private property and does not have any public roads. A map of the site showing its property and associated roadways can be seen at <http://www2.slac.stanford.edu/maps/slacarea.html#areaMap>.

2 PLAN

2.1 SUMMARY

SLAC prohibits the transport of hazardous materials in personal vehicles, requires all loads of otherwise regulated Department of Transportation (DOT) hazardous materials to be properly identified, marked, labeled, segregated according to compatibility, and secured to prevent sliding or shifting during transport in accordance with SLAC manuals and procedures. Additionally, personnel are directed and trained to use equipment only as intended, and not to exceed the rated capacity of containers, vehicles, and other equipment.

3 COMPLIANCE METHOD

3.1 GENERAL

The transportation of hazardous materials within SLAC property requires special attention and controls to ensure safe transportation of such materials and to ensure that during the transportation contents are not spilled, packaging is not damaged and personnel are properly trained to generate, transport and receive such materials.

This document supplements and reiterates some requirements contained in other SLAC documents, such as the *ES&H Manual*, *SLAC Radiological Controls Manual*, *SLAC's Radioactive Waste Manual* and various procedures such as SLAC-760-0A30C002, "Shipping and Receiving Radioactive Material."

In general, the traffic control program at SLAC requires that an on site driver possess a valid driver's license and sign the SLAC Motorized Vehicle Driving Privilege form prior to driving on site. The maximum speed limit is 25 MPH, and drivers as well as passengers must wear safety belts. In addition to having on site Security and Fire Departments, SLAC has an agreement with the City of Palo Alto to respond to on site emergencies, as stated in the SLAC Emergency Preparedness Plan. This information is available in the *ES&H Manual*, Chapter 13, "Traffic and Vehicular Safety," and presented to staff members through training.

3.2 INCOMING HAZARDOUS MATERIALS

Products delivered to SLAC are expected to arrive in full compliance with DOT requirements as they have been in commerce. These items are delivered directly to the point of use in their original packaging as required by contract with HAAS TCM, the SLAC Chemical Management System vendor.

3.3 HAZARDOUS MATERIAL TRANSPORTATION

SLAC establishes appropriate identification, packaging and labeling systems for hazardous chemical containers, maintains Material Safety Data Sheets (MSDSs) for the chemical hazard inventory at work locations, and mandates personnel training in the identification and control of these hazards through the Hazard Communication Program. Whenever possible, materials are kept in their original containers to ensure compatibility, with identifying labels and markings attached. When containers are moved on site, containers are inspected to ensure integrity, incompatible chemicals are transported separately, and all containers are tied-down to prevent shifting. As necessary, chemicals may be transferred to new DOT approved containers. This information is contained in the *ES&H Manual*, Chapter 40, "Hazardous Materials Management."

3.3.1 Radioactive Materials

SLAC defines radioactive materials in SLAC-I-760-2A30C-006-R004, "Criteria Defining and Monitoring for Radioactive Material," and does not use the 10CFR49 criteria, which is less conservative. The movement of all radioactive materials within SLAC requires radiological surveys performed of the material by Radiation Protection Field Operations (RPFO) personnel prior to the transportation of the material. All

material transported shall have a radioactive material label attached to the material. RPFO also provides guidance on packaging for safe transportation when necessary. Additional information on contamination controls are found in the *SLAC Radiological Control Manual* as well as the *ES&H Manual*, Chapter 9, "Radiological Safety."

3.3.1.1 Controls for transporting all radioactive materials

- a. Personnel performing transport shall be GERT qualified and wear personal dosimeters.
- b. Personnel shall review labels regarding dose rates and contamination levels.
- c. Items shall be secured during transportation to ensure material does not shift.
- d. Materials with radioactive contamination shall at least be double bagged and if heavy or possible puncture points, have a durable outer covering.
- e. The destination shall be properly identified and posted (eg; RCA, Radiation Area) to receive material and may need to be indoors.
- f. The destination's area manager or building manager will be notified if the receipt of the material may impact other work or personnel in the area.
- g. When transporting liquids, the transporter shall inspect the container (tank, poly-bottle, etc.) to ensure all closures are secured to prevent an inadvertent spill.

3.4 HAZARDOUS AND RADIOLOGICAL WASTE TRANSPORTATION

On site transportation of DOT regulated wastes requires the most comprehensive documentation, oversight and control due to regulatory requirements from agencies such as The Environmental Protection Agency and Nuclear Regulatory Commission. Declaration forms are used to classify the waste and document its generation and track its progress through disposal. Both the Hazardous Waste Management Group and the Radioactive Waste Management Group provide container specifications, packaging guidelines, segregation, and load bracing requirements as needed. All waste packages are marked and labeled as needed with SLAC internal numbers, hazardous waste labels (including constituents), PCB notices, asbestos notifications /certifications, and radiation survey information.

3.4.1 Hazardous waste transportation controls

The Hazardous Waste Management Group is a good resource for transporting hazardous waste on site and should be used whenever possible. The requirements for transporting hazardous waste on site are listed below and in Chapter 17 of the *ES&H Manual*, "Hazardous Waste."

- a. Follow guidelines in Chapter 13, "Traffic and Vehicular Safety", in the *ES&H Manual*.
- b. Use only DOE or SLAC equipment for transporting hazardous waste.
- c. Personnel transporting hazardous wastes shall be Hazardous Waste Management qualified (SLAC ES&H Course #105) and wear appropriate personal protective equipment.
- d. Obtain clearance from Waste Management personnel to move hazardous waste to a new location.
- e. Contain the waste in compatible and properly sealed containers and labeled in accordance with *ES&H Manual*, Chapter 17, "Hazardous Waste."
- f. Always secure heavy loads with proper support (e.g., pallets, etc.) and proper tie downs (straps, etc.) for hazardous equipment and always use proper equipment for securing drums on forklifts.
- g. Use carrying cases, racks, and trays, where appropriate for smaller containers (to keep them upright and prevent them from shifting during transport).

- h. Cushion glass containers to prevent breaking during transport.
- i. Never drive faster than is safe for the driving conditions and load being handled and use caution when rounding corners, driving over speed bumps, and be especially cautious when crossing busy intersections.

3.4.2 Radioactive and mixed waste transportation controls

- a. Only DOE or SLAC equipment shall be used for transporting radioactive and mixed waste.
- b. Personnel performing transport shall be GERT qualified and wear personal dosimeters.
- c. Receiving facility shall be notified of intended transport.
- d. Personnel shall review labels regarding dose rates and contamination levels, to ensure they are within the limits specified in the *SLAC Radiological Control Manual*.
- e. Waste shall be compatible with the container. Though contaminated items shall at a minimum be double bagged, sharp or heavy objects require more durable containerization.
- f. Containers or items are marked with declaration form identification number, tagged with radiological surveys, EPA, DTSC, or other required notices.
- g. Packages shall be secured during transportation to ensure items do not shift.

Additional information on “Moving Radioactive Waste On-Site”, which includes mixed waste, is located in Chapter 4 of the *Radioactive Waste Manual*.

3.5 TRAINING REQUIREMENTS

DOT requires that the personnel performing transportation activities receive recurring training in the process. Staff members from Waste Management Section, Radioactive Waste Management Group, Field Operations Group, as well as Shipping and Receiving Department who are responsible for off-site shipments receive DOT and IATA training as dictated by their job assignments. Additionally, SLAC employees and contractors receive training in the areas of waste generation, hazard communication, and radiation safety with periodic refreshers.

REFERENCES

- *ES&H Manual*, Chapter 40, “*Hazardous Materials*”
- Employee Orientation Environmental Safety and Health (EOESH), Study guide, Chapter 4, “Hazardous Waste and Materials”
- *ES&H Manual* Chapter 17, “Hazardous Waste”
- *SLAC Radiological Control Manual*, Chapter 4, Part 2, “Release and Transportation of Radioactive Material”
- *SLAC Radiological Control Manual*, Chapter 4, Part 3, “Radioactive Source Controls”
- *Radioactive Waste Manual*, Chapter 4, “Moving Radioactive Waste On-Site”
- *ES&H Manual* Chapter 13, “Traffic and Vehicular Safety”
- Shipping and Receiving Radioactive Material (SLAC-760-0A30C-002)
- Criteria Defining and Monitoring for Radioactive Material (SLAC-I-760-2A30C-006-R004)
- Title 10 *Code of Federal Regulations*, Parts 71-80