

# **HAZARDOUS MATERIALS TRANSPORTATION POLICY and PROCEDURES**

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for

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Hazardous Materials Transportation  
Policy & Procedures

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## **1.0 Shipping or Transport of Hazardous Materials**

### **1.1 Introduction**

This procedure establishes safety requirements for the proper packaging and transportation of DOE off-site shipments and on site transfers of hazardous materials. This procedure also meets JSA's compliance requirements regarding written procedures of DOE Order 460.1C "Packaging and Transportation Safety".

Hazardous materials shipping regulations are administered by the U.S. Department of Transportation (USDOT) and the International Air Transport Association (IATA). The rules are specified in 49 Code of Federal Regulations Part 171- 180 and in IATA consensus standards adopted by the USDOT. Penalties for non-compliance with these rules are significant and include civil and criminal fines for both individuals and organizations.

The Jefferson Lab Property Manager is designated as the Hazardous Materials Transportation Officer. It is the responsibility of this individual to ensure compliance with hazardous materials shipping and transport rules for both on and off site. This includes shipments of radiological and hazardous waste.

### **1.2 Required Training for Hazardous Material Transportation**

#### **Off Site Transport & Shipments:**

The Hazardous Materials Transportation Officer shall provide access to an approved training program for employees, who during the course of employment, directly affect hazardous materials transportation (not otherwise covered by Material of Trade (MOT) exceptions)) through one or more of the following activities:

- Loads, unloads, or handles hazardous materials onto or from vehicles that enter highway commerce;
- Tests, reconditions, repairs, modifies, marks, or otherwise represents containers, drums, or packaging as qualified for use in the transportation of hazardous materials;
- Prepares hazardous materials for transportation offsite
- Prepares shipping documents for hazardous material shipments; or
- Operates a vehicle used to transport hazardous materials off site of JLab property.

The training will be conducted within an appropriate and timely manner from the date of hire for those employees whose job functions involve any of the aforementioned hazardous material tasks and once every three years thereafter for hazardous materials entering highway commerce (USDOT) and every two years for packages offered for

transportation by air (IATA). Additional training shall be provided for any job change involving the use of hazardous materials.

An employee may perform job functions prior to the completion of training provided the employee performs those functions under the supervision of a properly trained and knowledgeable employee.

Training program includes the following:

- General training to provide awareness and familiarization of the requirements of the Hazardous Materials Transportation Program and to enable the employee to recognize and identify hazardous materials consistent with the hazard communication standard;
- Function-specific training applicable to the functions the employee performs;
- Safety training pertaining to the following:
  - Emergency response information;
  - Measures to protect the employee from the hazards associated with hazardous materials to which they may be exposed in the workplace, including specific measures the employer has implemented to protect employees from exposure; and
  - Methods and procedures for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials; or
  - Any additional department specific training (e.g., pre-trip safety inspection or the use of vehicle controls and equipment, including the operation of emergency equipment).

**On Site Transport:**

Employees moving hazardous materials on site must:

- Read this policy
- Follow guidance in Appendix D

**1.3 Training Records**

Training records shall be maintained by the Property Office, ESH&Q or the Radiation Control Department as appropriate and include the following:

- The employee's name;
- The most recent training date;
- A description, copy, or the location of the training materials used to meet the aforementioned training requirements;
- The name and address of the person providing the training;
- Certification that the employee has been trained and tested as required; and

- Results of the learning measurement exercise.

#### **1.4 Security of Hazardous Shipments**

The Jefferson Lab “Transportation of Hazardous Material Security Plan” addresses the security requirements required by 49 CFR. The Security Plan is found at the following link:

[http://www.jlab.org/div\\_dept/train/Knowledge\\_Docs/2010\\_hazmat%20security.pdf](http://www.jlab.org/div_dept/train/Knowledge_Docs/2010_hazmat%20security.pdf)

#### **1.5 Bringing Hazardous Materials to Jefferson Lab**

Hazardous Materials enter Jefferson Lab through the Shipping & Receiving Section. These materials have been pre-approved through either the purchase requisition system or through experiment reviews.

Employees or visiting researchers may not bring hazardous materials to Jefferson Lab through other means without the pre-approval of their supervisor/sponsor and the ESH&Q Division.

#### **1.6 Shipping Off Site**

Hazardous materials shipping regulations are extremely complex and require specific training for certification.

Only individuals specifically trained and certified in accordance with USDOT requirements may prepare hazardous materials for shipment.

Shipping & Receiving (S&R) personnel have received this training and will arrange all non-waste hazardous materials shipments except by ESH&Q or the Radiation Control Department employees where appropriate.

Due to the complicated nature of hazardous materials shipment, you must provide Shipping & Receiving the following information two weeks prior to your expected shipping date:

- Material name
- Form of material (i.e. liquid, solid, gas etc)
- Quantity of Material
- Chemical Abstracts Service (CAS) number (if any)
- Material Safety Data Sheet
- Product identification number (if any)
- Shipping destination
- Special shipping Requirements
- Preferred shipping method (i.e. USPS, FedEx, UPS)

Certain hazardous materials are exempt from shipping regulations when shipped in small quantities. These accepted quantity limits vary by material. S&R will determine the regulatory status of your material, including any possible exceptions, based on information submitted above.

Certified personnel in ESH&Q Division are authorized to arrange shipping of radiological or chemical hazardous waste. Disposal of these wastes is arranged with licensed waste haulers and shipping documents are provided to the Hazardous Materials Transportation Officer.

Off site transportation of hazardous materials via Lab staff requires full compliance with USDOT Hazardous Material Transportation Regulations contained in 49 CFR. If the quantities carried off site exceed the "Material of Trade" exceptions, then all the requirements contained in 49 CFR, applicable to the specific material, must be followed. This includes but is not limited to special training for person packaging material and the vehicle driver, compliance of shipping packaging, placarding of transport vehicle and emergency response plans.

Off site transport of liquefied nitrogen for education presentations must be in a properly labeled, unpressured dewar (< 25.3 PSIG) is exempt from 49 CFR. This material may be transported only in the back of an open bed truck or golf cart following an approved work process control document. ([PHMSA Interpretation #10-0101](#)).

## **1.7 Transporting Hazardous Materials On Jefferson Lab Site**

The on-site transportation requirements and quantities are specified in Appendix D and are based on MOT exceptions allowed in 49 CFR. Specifically, certain hazardous materials, when used in direct support of Jefferson Lab's business, may be transferred from one location to another by a staff member that is cognizant of the hazards without meeting the extensive training, documentation and placarding requirements contained in 49 CFR. However, the material still must be labeled, appropriately packaged, segregated according to compatibility, and secured to prevent shifting during transport. If transport is prohibited by Appendix D or if quantities to be transported exceed MOT limits specified, you must perform the task under an approved Work Control Document (i.e. OSP) with concurrence from the Hazardous Materials Transportation Officer. This includes radiological and hazardous waste movements.

## **APPENDIX D      Transportation of Hazardous Material On Site by Jefferson Lab Employees and Users**

### **Background**

The transportation requirements and quantities specified in this document are based on MOT exceptions allowed in 49 CFR. Specifically, certain hazardous materials, when used in direct support of Jefferson Lab's business, may be transferred from one location to another on JLab property by a staff member as the hazardous material will be consumed by the staff's work on site. If material or quantities are not included in the exception noted in this appendix, then an approved Work Control Document (i.e. OSP) must be established with concurrence from the Hazardous Materials Transportation Officer and the "Authority Having Jurisdiction" (AHJ).

### **Responsibility**

**AHJ** – are the subject matter experts responsible for safe handling of various hazardous materials. This includes monitoring adherence with the procedures contained in this document. Specifically, for the following material the AHJ is:

- Radioactive Material - ESH&Q Radiation Control Group
- Hazardous Chemicals - ESH&Q Industrial Hygiene Group
- Biohazard Material - ESH&Q Occupational Medicine

**Jefferson Lab Staff, Subcontractors and non-Jefferson Staff (Users)** - Before conducting the initial transport of Hazardous Materials, are responsible for:

1. Obtaining approval from the supervisor/SOTR.
2. Following the transportation procedures outlined in this document.
3. Understanding the hazards associated with the specific product.
4. Following any hazard mitigation procedures contained in Jefferson Lab ES&H Manual or applicable Work Control documents.
5. Understanding and following emergency spill response procedures.

**Line Managers** – shall ensure that individuals assigned to transport hazardous materials have the training (e.g. PPE, spill response or material specific hazard training) and/or experience to safely handle the specific hazardous material.

### **Applicability**

The hazardous material transportation rules in this document apply to Jefferson Lab staff, subcontractors and non-Jefferson Lab staff who transfer chemicals and radioactive material on site.

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This document does not provide details on --- specific hazards, required protective equipment or safe handling procedures for any material. This information is found in the Jefferson Lab ES&H Manual, applicable Work Control Documents, Material Safety Data Sheets (MSDSs) or other industrial guidance.

### **General Requirements**

Personal vehicles may not be used for transportation of hazardous materials on the Jefferson Lab accelerator site or main campus.

Secure packages so the material does not spill during transport.

Hazardous materials are marked with labeling describing the material in the container. Containers must be visually inspected for damage or signs of leakage before handling. If container is damaged or leaking --- contain the flow if you are able to do so without endangering yourself, otherwise do not touch or move container and immediately contact the Chemical Spill Response Team at 757-269-7882.

Keep incompatible chemicals separated during transport. Contact the ESH&Q Industrial Hygiene Group if you have question regarding chemical incompatibility.

Hazardous materials must be packaged in the original manufacturer's containers or equivalent. Outer packaging is not required unless to prevent tipping or secondary containment to prevent spills.

Cryogenic liquids and compressed gases shall only be transported in open bed truck, forklift, or cart. Valves must be closed and capped as applicable.

### **On Site Transportation Procedures**

Transport of hazardous material is based on the Hazardous Material and Packing Group Classifications contained in Appendix C of 49 Code of Federal Regulations Part 173. Material Classification and Packing Group for each material can also be found on the Material Safety Data Sheet for the item. MSDSs for all hazardous materials used at Jefferson Lab can be found at: <http://www.jlab.org/msds>

**Hazardous Material Classifications and On Site Requirements**

Hazard Class	Marking/Label	Allowable transport amount on site under this document	Examples of JLab chemicals	Requirements
<p><b>Hazard Class 1:</b> Explosives</p>		<p>Not permitted</p>	<p>None</p>	<p>n/a</p>
<p><b>Hazard Class 2:</b> Gases (Non-Flammable, Flammable, Toxic Gas, Oxygen, Inhalation Hazard)</p>		<p>Cylinder size not to exceed 220 lbs. <i>Toxics: Contact IH</i></p>	<p>Helium, Nitrogen, Oxygen, Acetylene</p>	<p>Cylinder/dewar valves closed. Cap in place.</p> <p>Secure cylinder/dewar during transport.</p> <p>Transport only in open bed-trucks or forklifts.</p> <p>PPE during container handling</p>

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<p><b>Hazard Class 3:</b> Flammable Liquids</p>		<p>Up to 8 gallons</p>	<p>Paint, solvents, adhesives, resins</p>	<p>Container closed and secured in vehicle</p> <p>No smoking permitted</p> <p>PPE during container handling</p>
<p><b>Hazard Class 4:</b> Flammable Solids (Flammable Solid, Spontaneously Combustible, Dangerous When Wet)</p>		<p>Up to 66 lbs.</p> <p><i>Dangerous when wet materials: limited to 1 oz</i></p>		<p>Container closed and secured in vehicle.</p> <p>No smoking permitted</p> <p>PPE during container handling</p>
<p><b>Hazard Class 5:</b> Oxidizer and Organic Peroxide</p>		<p>Up to 66 lbs.</p>	<p>Hydrogen peroxide</p> <p>Epoxy hardeners or curing agents</p>	<p>Container closed and secured in vehicle.</p> <p>No smoking permitted</p> <p>PPE during container handling</p>
<p><b>Hazard Class 6:</b> Toxic/Poisonous and Infectious Substances Labels (PG III, Inhalation Hazard, Poison, Toxic)</p>		<p>Contact IH</p>	<p>Cyanide solutions</p> <p>Infectious agents</p>	<p>Contact IH</p>

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<p><b>Hazard Class 7:</b> Radioactive (I, II, III, and Fissile)</p>		<p>Contact Radiation Control Department</p>	<p>Activated equipment</p>	<p>Contact Radiation Control Department</p>
<p><b>Hazard Class 8:</b> Corrosive</p>		<p>Up to 66 lbs.</p>	<p>Hydrofluoric acid  Sulfuric acid  Safe-D-Scale acid</p>	<p>Container closed and secured in vehicle  PPE during container handling</p>
<p><b>Hazard Class 9:</b> Miscellaneous Dangerous Goods</p>		<p>Up to 66 lbs.</p>	<p>Lead debris</p>	<p>Container closed and secured in vehicle  PPE during container handling</p>