



Transportation, Storage, and Use Guidelines for Hazardous Materials

Objective

This guide illustrates best management practices associated with transportation, storage, and use of hazardous materials at University of Oregon research and teaching laboratories, laboratory support operations, and research field operations. These practices and procedures are intended to provide a safe working environment, promote a culture of forward-thinking risk mitigation, and to promote compliance with federal, state, and local regulations pertaining to hazardous materials.

Applicability

- University laboratories, chemical storage areas, and other research-related work areas that use hazardous materials (**with the exception of Biological Substance Category A materials or Radioactive Materials**).
- Remote field operations using hazardous materials in laboratory research.

Responsibilities

- Department Chair or Institute Director
 - Implement procedures which prevent inappropriate transportation and storage of hazardous materials within Departmental/Institute operations.
 - Promote concept of minimization of use of hazardous materials.
 - Facilitate communication between University administrative support units, and managers of Departmental/Institute users of hazardous materials.
- Faculty, Supervisory staff, Employee, and Students
 - Implement procedures within local units that prevent inappropriate transportation and storage of hazardous materials.
 - Facilitate communication between University administrative support units, and local users of hazardous materials.
- Environmental Health and Safety (EHS)
 - Provide information and technical assistance regarding transportation and storage regulation and best practices.
 - Provide regulatory required training to shippers of hazardous materials.
 - Act as the University representative during regulatory inspections.



Hazardous Material Transportation, Storage, and Use

Transportation

Hazardous materials being transported are in an environment of increased risk of probability and exposure to spill events. Transportation within commerce and other areas that involve exposure of the general public are highly regulated for the public's safety. Other prudent best practices are used to minimize exposures within the workplace. This guideline provides a general orientation to these topics; the office of Environmental Health and Safety is available for training and consultation.

Improper methods of transporting hazardous materials:

- Transportation via personal automobiles for work purposes.
- Transportation via Public Transit.
- Transportation across or on public roads, except when in compliance with Materials of Trade Exemption.
- Transportation in hazardous severe weather conditions.

Transportation requirements and best practices:

- Transportation between buildings should be done by walking, and should use indoor corridor connections whenever possible.
- Transport all hazardous materials using the container-within-a-container concept.
 - Small containers may be carried within an easily-handled secondary container.
 - Large containers should be transported in a bucket, or in a secondary container on a cart.
 - When transporting materials outdoors use a cart with pneumatic tires, and have a spill clean-up kit on the cart.
 - Transport incompatible materials (such as corrosives) within independent secondary containers.
- DOT-approved containers not requiring secondary containment
 - Transport 20L metal cans on a cart.
 - Transport gas cylinders using a cylinder cart.
 - Transport liquid nitrogen dewars on a cart, or on stable rollers.
- Move carefully; especially around corners and when on uneven terrain.



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- Transport via elevator may present special entrapment hazards; warn potential riders to use the stairs or wait for an unoccupied car.
 - Off-site transportation should involve consultation with EHS, and careful review to ensure compliance with Materials of Trade (MOT) exemptions.
 - Common Courier shipping of Hazardous Materials must comply with Department of Transportation (DOT) or International Air Transport Association (IATA) regulations. Consult with EHS.

A Materials of Trade (MOT) exemption applicable to many DOT requirements exists for the transportation of small quantities of hazardous material, when transportation is a support function rather than the primary business function. MOT exemptions may only be applied to hazardous materials classified into Division 2.1, 2.2, 4.1, 4.3, 5.1, 5.2, 6.1, 6.2, or Class 3, 8, 9, or ORM-D. Examples of applicability include: paints, thinners, gasoline, etc. used in maintenance operations; research field operations; and, educational demonstrations.

This exemption allows a business to transport hazardous materials on the public roads as long as the following specific conditions on packaging and labeling are met:

- Packaging is the original manufacturers, or an equivalent.
- Packaging is labeled with either common chemical name, or a proper shipping name.
- Packaging is leaktight.
- Outer packaging is securely closed, and secured against movement and damage.
 - Outer packaging is not required for receptacles (containers) secured within crates, bins, or compartments.
- Cylinders and pressure vessels must conform to DOT regulations, but do not require outer packaging.
 - Proper shipping name, UN identification number, and hazard class warning label.
- Packaging containing reportable quantities (Appendix A of 40 CFR § 172.101) must be marked with “RQ”.



Storage and Use

Fire codes limit the amount of hazardous materials that can be used and stored in the workplace. Provisions are detailed and vary with location and material; consult with EHS on details. Minimizing the quantity of hazardous material in use and storage is a prudent practice.

When in storage or use, hazardous materials containers require secondary containment as follows:

- Storage Areas
 - To protect single liquids containers >55 gallons in size (or >1000 gal aggregate).
 - To protect single solids containers >248 kg in size (or > 4524 kg aggregate).
- Use Areas
 - To protect individual vessels or systems > 5L in volume.
 - To protect multiple vessels or systems aggregating >20L in volume.
- Storage and Use
 - All hazardous waste containers.
 - To segregate incompatible materials (e.g. acids from bases, flammables from oxidizers).

References

Guidelines for Laboratory Close-Out – General guidelines on handling hazardous materials, equipment, samples/specimens, and non-hazardous materials during the close-out of a laboratory.

Transporting Hazardous Materials Quick Facts – General guideline on transporting hazardous materials.

PI Orientation & Laboratory Setup – General guideline to setting up a safe laboratory work environment.