



INDIANA UNIVERSITY

OFFICE OF THE EXECUTIVE VICE PRESIDENT
FOR UNIVERSITY ACADEMIC AFFAIRS

University Environmental Health and Safety

Hazardous Materials Transportation Program

October 23, 2017

1. INTRODUCTION

1.1. Purpose

The U.S. Department of Transportation (DOT) Hazardous Materials Regulations (HMR) [49 CFR Parts 171-180](#) apply to all transportation of hazardous materials by aircraft, railcar, vessel, and highway in the United States. In conjunction with the HMR, international and U.S. domestic air shipments must be prepared according to the International Civil Aviation Organization (ICAO) as published in the International Air Transport Association (IATA) Dangerous Goods Regulations. Combined, these regulations:

- Require training for anyone who prepares, offers, or receives regulated materials for shipment;
- Outline responsibilities for anyone involved in activities related to the shipment of hazardous materials (domestic) and dangerous goods (international);
- Define nine hazard classes and divisions when applicable;
- Specify proper classification, packaging, and labeling requirements and documentation of all shipments;
- Provide procedures for security assessment; and
- Establish penalties for non-compliance.

The purpose of this Program is to provide IU employees involved in activities related to hazardous materials transportation with comprehensive guidance for regulatory compliance. Compliance with DOT regulations is a requirement for any person who offers a hazardous material for shipment. Non-compliance with the federal HMR can result in civil or even criminal penalties for the University and the individual(s) responsible for the violation.

1.2. Scope

This Program applies to all Indiana University employees who ship or receive packages containing materials regulated for transport and to all employees who transport hazardous materials.

2. AUTHORITY AND RESPONSIBILITY

2.1. Indiana University Environmental Health and Safety (IUEHS) is responsible for:

- Developing and implementing the Hazardous Materials Transportation Program;
- Serving as a technical resource in support of this Program, including training courses or referrals to vendor training as needed;
- Maintaining required training records; and
- Maintaining the Hazardous Materials Security Plan for each campus, if required.

2.2. Departments are responsible for:

- Ensuring compliance with Program elements among department employees;
- Reporting non-compliance to their campus IUEHS immediately;
- Identifying HazMat employees and ensuring they are trained as specified in Section 4.1;
- Arranging for training if choosing a source outside of IUEHS;
- Providing training records for any outside training to IUEHS for your respective campus; and
- Identifying and obtaining all necessary shipping supplies.

2.3. Employees are responsible for:

- Completing all required training for all applicable hazardous materials functions; and
- Complying with all aspects of this Program.

3. ELEMENTS OF THE PROGRAM

3.1. Identifying HazMat Employees

Departments must identify and train employees who meet the regulatory definition of a “HazMat Employee”. A HazMat employee is anyone who performs the following job functions for hazardous materials in commerce:

- Prepares hazardous materials for shipment (packs, marks, labels shipping containers),
- Offers hazardous materials for shipment (fills out and/or signs shipping papers),
- Handles hazardous materials packages (accept incoming packages), and/or
- Transports hazardous materials.

University employees who perform any of the above functions for packages that are shipped or delivered by non-IU employees, must complete online Hazardous Materials Transportation Training. Therefore, if one employee packages a hazardous material, and another employee fills out the shipping paper (e.g. airway bill), both employees require training.

University employees who only receive packages of hazardous materials from IU employees, like IU Mail Room or receiving dock personnel, must complete online Hazardous Materials Transportation Training - for Receiving Only.

Training offered by other public or private sources must meet the training requirements of this Program. Records of training by all outside sources must be provided to IUEHS to ensure proper content and documentation. Specific information on required training elements can be found in Section 4 of this Program.

Alternatively, trained IUEHS professionals at the respective IU campus may be able to serve as a technical resource for employees with infrequent or one-time shipping needs.

3.2. Identifying Hazardous Materials

Employees must be able to identify hazardous materials they are shipping or receiving. Hazardous materials can be identified in several ways, including:

- Shipping papers for incoming packages will indicate if it contains a hazardous material,
- Safety Data Sheet (SDS) Section 14: Transportation Information; and
- Package markings and labels.

Packages that contain hazardous materials are marked with a diamond-shaped DOT Hazard Class label or marked ORM-D (regulated consumer commodity). DOT has assigned nine general hazard classes as follows:

Hazard Class	Description
1	Explosive Materials
2	Gases – Flammable/Non-Flammable/Toxic
3	Flammable Liquids
4	Flammable Solids, Pyrophoric/Dangerous When Wet Materials
5	Oxidizers and Organic Peroxides
6	Poisons and Infectious Materials
7	Radioactive Materials
8	Corrosive Liquids and Solids
9	Miscellaneous

Some hazard classes are broken further down into divisions. Common examples of hazardous materials at IU include: toxic, corrosive or flammable laboratory reagents, solvents, compressed gas cylinders, and biological and radioactive materials. There are some exceptions to the regulations, which include materials of trade (MOT), materials transported within the University that are not in commerce, and very small quantities of certain hazardous materials.

3.3. Transporting Chemicals

Due to the nature of University operations, and because DOT only regulates hazardous materials that are shipped in commerce, there are many regulatory exceptions under which hazardous materials can be transported on campus. However, many activities (HazMat Employee functions) still require safe, compliant procedures and training. This section outlines the specific requirements and procedures for activities covered by this Program. Procedures for radioactive materials are covered in the IU Radiation Safety Manual for each campus.

3.3.1. Receiving, Picking Up, and Delivering Hazardous Materials

3.3.1.1. Receiving Materials from a Commercial Shipper

- Any IU employee who signs for a hazardous materials package or shipment must be trained as a HazMat Employee. If no trained employee is available, a package cannot be accepted until a trained employee or IUEHS representative is contacted, and arrives to sign for the material. This includes packages containing dry ice.
- Packages must be opened by the addressee only.
- Package must be inspected for visible signs of damage. If damage, leaks or strong odors are noted, the package must be rejected back to the carrier. It is the transporter's responsibility to return it to address leaks and return the package to the shipper. (If a problem arises or is noticed after acceptance, isolate the package from building occupants (in ventilated area if possible), and follow your campus emergency procedures for a chemical spill.
- Paperwork for acceptable packages must be verified as accurate and signed.
- Special handling requirements (e.g. keep cold) must be noted. Handle the package accordingly.
- Hazardous materials must not be left unattended, stored outside, or in areas where they could become damaged, misplaced, or stolen. Do not store packages of hazardous materials in areas where food is being stored or served, such as break rooms.
- Package addressee must be contacted immediately if they are required to pick up the package from a separate receiving location. See Section 3.3.1.3 if you are delivering the package to the addressee.
- If you receive a suspicious package, or a package becomes missing or stolen, report the problem to University Police at your campus.

3.3.1.2. Picking up Materials from a Campus Receiving Facility or Stock Room

3.3.1.2.1. Intra-Building Pick-up

Intra-building transport takes place within the same building, or an adjacent, connected building without the need to go outside with the hazardous material.

- Any IU employee that picks up a hazardous material for intra-building transport must have either Hazard Communication Training or Laboratory Safety Training and be familiar with spill reporting and response procedures.
- Packages should be checked to verify the recipient, and that the shipment is accurate and complete. Do not open hazardous materials shipping packages until you reach your destination.

- IUEHS recommends using a cart with secondary containment for transporting any hazardous materials through hallways. However, you may hand-carry up to two (total) containers in safety totes only.
- A freight elevator must be used if available for moving hazardous materials within buildings. Stairs must be avoided when feasible.

3.3.1.2.2. **Inter-Building Pick-up by Vehicle**

- Vehicle transport of hazardous materials by IU employees from one IU building to another, must be trained as a HazMat Employee per Section 4 of this Program.
- Hazardous materials transport in personal vehicles is prohibited under any circumstance. Only IU vehicles (owned, leased, or rented) are to be used for transporting hazardous materials.
- If you are picking up a material from the receiving facility or mailroom, you must leave it in its original shipping packaging until you get it to its final location.
- If you are picking up material(s) from a stock room, you must use a cushioned box or cooler, Styrofoam® bottle holders, or equal method for holding the containers and preventing them from tipping or rattling together while you travel between buildings. If materials are unpackaged, you must segregate incompatible materials according to hazard (see Appendix B) and box or containerize them separately so that no mixing will occur if they break or spill in transit.
- Hazardous materials must not be transported in the passenger compartment of any vehicle. All hazardous materials transport must be confined to cargo areas or trunks of vehicles.
- Transport of hazardous materials is limited to 15 gallons of liquid and or 50 pounds of solids in an IU vehicle at any one time unless otherwise approved by IUEHS.
- Gas cylinders are not to be transported by vehicle unless they can be secured and kept upright inside the vehicle as is required for all cylinders.

3.3.1.3. Delivering Materials to IU Locations

Note: *In accordance with the training requirements of the IU Waste Management Program, employees who deliver hazardous waste to IUEHS or transfer waste from the point of generation to any other accumulation or storage area, must complete Waste Management Training for Laboratory Employees or Waste Management Training for Non-Laboratory Employees online **annually**.*

3.3.1.3.1. **Intra-Building Delivery**

Intra-building transport takes place within the same building, or between buildings connected by tunnels or other means that eliminate the need to go outside with the hazardous material.

- Intra-building delivery of hazardous materials requires IU Employees to have either Hazard Communication Training or Laboratory Safety Training, and be familiar with spill reporting and response procedures.
- Packages for delivery must be left in the original shipping container, and must be opened only by the addressee.
- Employees who deliver hazardous waste to IUEHS (IU Bloomington campus only), must review relevant portions of the IU Waste Management Guide at least annually and complete the Waste

Management Training for Laboratory Employees or Waste Management Training for Non-Laboratory Employees annually.

- Materials that are unpackaged must be delivered using a box or tub with absorbent, cushioning material. Take care to stabilize glass containers so that they do not rattle or break in transit.
- IUEHS recommends using a cart with secondary containment for transporting any hazardous materials through hallways. However, you may hand-carry up to two (total) containers in safety totes only.
- A freight elevator must be used if available for moving hazardous materials within buildings. Stairs must be avoided when feasible.

3.3.1.3.2. *Inter-Building by Cart Delivery*

- Any IU employee that prepares or delivers a hazardous material delivery to an IU facility that is not within the same building (intra-building), but is accessible via cart by gently sloped paved surfaces, with available crosswalks and low pedestrian and vehicle traffic must follow the procedures for intra-building deliveries in *Section 3.3.1.3 A* above.

3.3.1.3.3. *Inter-Building Delivery by Vehicle*

- Vehicle transport of hazardous materials by IU employees from one IU building to another, must be trained as a HazMat Employee per Section 4 of this Program. Training is available online by following the link at protect.iu.edu. [Contact IUEHS at your respective campus](#) if you have additional questions regarding authorization and training options.
- Hazardous materials transport in personal vehicles is prohibited under any circumstance. Only IU vehicles (owned, leased, or rented) are to be used for transporting hazardous materials.
- Packaged material must remain in the original shipping package until it is delivered to its final location.
- Unpackaged material(s) for delivery by vehicle must be packed into a cushioned box or cooler, compartmentalized Styrofoam® block, or equal method for holding containers, and preventing them from tipping or rattling together. Segregate and box or containerize materials according to hazard (see Appendix B).
- Hazardous materials must not be transported in the passenger compartment of any vehicle. All hazardous materials transport must be confined to cargo areas or trunks of vehicles.
- Transport of hazardous materials is limited to 15 gallons of liquid and or 50 pounds of solids in an IU vehicle at any one time.
- An SDS must be provided to the delivery driver for packages that do not clearly indicate the contents on the outer container.
- All un-boxed materials must be in sturdy, flat-bottomed containers that will not tip in transit and properly secured while the vehicle is in motion.
- Gas cylinders are not to be transported by unless they can be secured and kept upright inside the vehicle as is required for all cylinders.

3.3.2. *Transporting Hazardous Materials to Work or Research Sites*

3.3.2.1. On Campus

- Any IU employee that moves hazardous materials from their shop, storage, or laboratory location to a temporary work or research location within the confines

of the same campus must have either Hazard Communication Training or Laboratory Safety Training.

- Hazardous materials transport in personal vehicles is **PROHIBITED** under any circumstance. Only IU vehicles (owned, leased, or rented) are to be used for transporting hazardous materials.
- All materials not in boxes, must be in sturdy, flat-bottomed containers that will not tip in transit and must be properly secured, if applicable, while the vehicle is in motion.
- Hazardous materials must not be transported in the passenger compartment of any vehicle. All hazardous materials transport must be confined to cargo areas or trunks of vehicles.
- Transport of hazardous materials is limited to 15 gallons of liquid and or 50 pounds of solids in an IU vehicle at any one time.
- Gas cylinders are not to be transported by vehicle unless they can be secured and kept upright inside the vehicle as is required for all cylinders.

3.3.2.2. Off Campus

- Any IU employee that moves hazardous materials from their shop, storage, or laboratory location to a temporary work or research location not located on campus must be trained as a HazMat Employee. Transportation of portable assay kits for field work does not require training as a Hazmat employee, but does require Laboratory Safety Training. Users of these kits must read and follow any directions and safety information provided by manufacturers and are advised to contact the manufacturer or IUEHS if they have any safety related questions.
- All materials not in boxes, must be in sturdy, flat-bottomed containers that will not tip in transit and must be properly secured, if applicable, while the vehicle is in motion.
- Hazardous materials must not be transported in the passenger compartment of any vehicle. All hazardous materials transport must be confined to cargo areas or trunks of vehicles.
- Transport of hazardous materials is limited to 15 gallons of liquid and or 50 pounds of solids in an IU vehicle at any one time.
- Gas cylinders are not to be transported by vehicle unless they can be secured and kept upright inside the vehicle as is required for all cylinders.

3.3.3. Shipping Hazardous Materials by Commercial Carriers

3.3.3.1. General Requirements

- All shipments of hazardous materials to non-IU locations must be done by licensed commercial carriers subject to the hazardous materials regulatory requirements of 49 CFR Parts 171-180.
- All IU employees preparing hazardous materials for shipment by commercial carrier or signing hazardous materials shipping paperwork must be trained as a HazMat Employee. Depending on the level of hazard and quantity of material to be shipped, additional requirements may apply including special packaging supplies. IUEHS may provide carrier recommendations, packaging guidance, training, and/or signatures on paperwork if necessary. Contact IUEHS as much in advance of the foreseeable shipping date as possible for assistance.
- Hazardous materials shipments by air have more restrictions than ground shipments. They should be avoided when feasible. IUEHS may assist as a technical consultant for air shipments to the extent possible given proper notification. Depending on the type and quantity of material you are shipping, special packaging requirements may require you to contract directly with a vendor that specializes in turnkey hazardous materials shipping.

3.3.3.2. Specific Requirements

3.3.3.2.1. *Biological Materials*

Biological materials are a common hazardous material shipped and received at IU. Any employee who performs any HazMat function must be trained, depending on the type of material and functions performed. The following requirements are specific to DOT hazard class 6.2, Infectious Substances and Biological Materials.

- In addition to the general requirements in 3.3.3.1 above, all IU employees who receive, package or ship biological materials must complete training.
 - Employees with functions limited to receiving or signing airway bills must be familiar with the hazards of the material, security measures, and spill response procedures. Online [Hazardous Materials Transportation Training](#) must be completed.
- For IU employees who perform more advanced functions related to shipping biological materials, such as identifying the material, selecting packaging, packing the shipping container, etc., the [IU Shipment of Biological Materials](#) training course must be completed. Limited classroom sessions may be available. Contact your campus IUEHS for details. **Note:** *This training includes shipping dry ice, so additional training for dry ice is not needed.*
 - A record of equivalent training may substitute for the above IU trainings. Documentation must be filed with IUEHS, and equivalency will be determined based on a review of the training content. See [Section 4](#) for more information on training.

3.3.3.2.2. *Dry Ice*

- All IU employees who prepare packages for shipment with dry ice must follow IUEHS guidance.

3.3.3.2.3. *Hazardous Waste*

- In addition to the transportation requirements of 49 CFR Parts 171-180, hazardous waste shipments are subject to the regulatory requirements of 40 CFR Parts 262-264. Because IUEHS needs to monitor these shipments closely, only IUEHS or their specifically authorized designees are allowed to sign the shipping paperwork for hazardous waste shipments.
- IUEHS must be notified of any project that will generate hazardous waste, and must approve all disposal facilities that will receive hazardous waste from IU.

3.3.3.2.4. *All Other Hazardous Materials*

If the need arises to ship any other type of hazardous material via commercial carrier, IUEHS may be able to serve as a technical resource.

3.3.4. **Chemical Moves to IU Locations**

See [Appendix B](#) for procedures.

3.4. **Hazardous Materials Security Plan**

In 2003, DOT created a program that requires certain shippers and transporters to create security plans designed to limit access to hazardous materials that could be utilized in acts of malfeasance.

IUEHS will assess the applicability of the security plan requirement at each campus. When applicable, IUEHS will develop and maintain the Plan, and will also make security plan training available to affected employees.

4. TRAINING AND RECORDKEEPING

4.1. Training Requirements

Initial training must be provided within 90 days of employment, or a change in job function(s) involving hazardous materials. Until trained, an employee may not perform HazMat shipping or receiving duties. Refresher training is required every two years.

The scope of training that employees receive depends on job function(s) and hazardous material(s) they handle. Regulation 49 CFR Part 172 [Subpart H](#) and [Subpart I](#) detail the types of training that must be included:

- *General Awareness/Familiarization* - Provide familiarity with the requirements of the regulations and to enable the employee to recognize and identify hazardous materials.
- *Function-Specific* - Provide training on the requirements of the regulations related to the employee's job functions.
- *Safety* - Provide information on hazards and instruction on safe handling, emergency response procedures and accident prevention.
- *Security Awareness* - Provide a general understanding of the security risks associated with hazardous materials transportation and methods to enhance transportation security, including how to recognize and respond to possible security threats.

Additionally, if a DOT Hazardous Materials Security Plan is required for the campus, training must also include:

- *Comprehensive Security Training* - Provide each HazMat Employee training on the Hazardous Materials Security Plan and its implementation. Security training must include University security objectives, specific security procedures, employee responsibilities, actions to take in the event of a security breach, and the organizational security structure.

4.2. Implementation

IUEHS offers [Hazardous Materials Transportation Training](#) online. Training may also be performed by other public or private sources. All trained employees will be required to demonstrate comprehension through testing. In order to demonstrate adequate comprehension, employees must score at least 80% on a post-training quiz. Employees who score less than 80% must re-take the training and test until the passing score is attained.

4.3. Recordkeeping

4.3.1. Training Records

A training record must be created for each HazMat Employee for the current 2 year period. It must be retained for as long as that employee is employed by the University, and for a period of 90 days after separation from IU. Records of training by all sources must be communicated to IUEHS to ensure proper documentation. The record must include:

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

4.3.2. Shipping Papers

Individuals who ship a hazardous materials package must retain a hard copy or electronic image of the shipping papers for two years. Each shipping paper copy must include the date of acceptance by the initial carrier. The copy must be accessible and available, upon request by a regulatory inspector.

5. REFERENCES

- [Department of Transportation Hazardous Materials Regulations](#)
- [International Air Trade Association](#)
- [IU Biosafety Manual](#)
- [IU Laboratory Safety and Chemical Hygiene Plan](#)
- [IU Radiation Safety Manual](#)
- [IU Waste Management Program](#)

6. REVISIONS

New Document – April, 2015

Revised – October, 2017

Appendix A: Glossary

Dangerous Good – the international term for a substance or material capable of posing a risk to health, safety, property, or environment; that meets the criteria of one or more of the nine United Nations (UN) hazard classes; and, where applicable, meets the criteria for one of three UN Packing Groups according to the provisions of the Dangerous Goods Regulations (DGR) Section 3. The nine classes relate to the type of hazard whereas the packing group relates to the applicable degree of danger within the class. The international term for *hazardous material*.

DOT – Department of Transportation

Hazard Class – a group of hazardous materials that share similar dangerous characteristics, as defined by the DOT and UN.

Hazardous Material (HazMat) - a substance or material which has been determined by the U.S. Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated. The term includes items such as samples, reagent chemicals, and commercial products (dry ice, alcohol, acetone, formalin, etc.). Synonymous with *dangerous good*.

HazMat Employer - uses one or more HazMat Employees (full-time, part-time, temporary or self-employed) to:

- Transport hazardous materials in commerce;
- Cause hazardous materials to be transported or shipped in commerce; or
- Design, manufacture, fabricate, inspect, mark, maintain, recondition, repair or test a package, container, or packaging component that is represented, marked, certified, or sold by that person as qualified for use in transporting hazardous materials in commerce.

HazMat Employee – a person who is employed (full-time, part-time, temporary or self-employed) by a HazMat Employer and who directly affects hazardous materials transportation safety by performing the following functions:

- Loads, unloads, or handles HazMat;
- Tests, reconditions, repairs, modifies, marks, or otherwise represents packaging as qualified for use in the transportation of HazMat;
- Prepares HazMat for transportation;
- Responsible for safety of transporting HazMat; or
- Operates a vehicle used to transport HazMat.

IATA – International Air Transport Association

Materials of Trade (MOT) – hazardous materials, other than waste, that are carried on a motor vehicle to:

- Protect the health and safety of the motor vehicle operator or passengers, such as insect repellent or a fire extinguisher;
- Support the operation or maintenance of a motor vehicle (including its auxiliary equipment), such as a spare battery or gasoline; or
- Directly support a principal business of a private motor carrier (including vehicles operated by a rail carrier) that is other than transportation by motor vehicle – for example, landscaping, pest control, painting, plumbing, or welding services.

Shipping Paper - a document which accompanies a hazardous material shipment that must be retained for two years as required by the DOT.



INDIANA UNIVERSITY

**OFFICE OF THE EXECUTIVE VICE PRESIDENT
FOR UNIVERSITY ACADEMIC AFFAIRS**

University Environmental Health and Safety

Indiana University

Hazardous Materials Move Guide

Transportation Procedures for Chemical and Biological Materials

October 2017



SECTION 1

Introduction

This Guide has been developed as a supplement to the Indiana University Environmental Health and Safety (IUEHS) [Hazardous Materials Transportation Program](#) and Department of Transportation (DOT) hazardous materials regulations. The purpose of the Guide is to facilitate the safe and compliant relocation of chemical and biological materials*. This Guide does not cover any aspect of shipping or receiving HazMat packages through commercial vendors (i.e. FedEx), nor does it meet [HazMat Employee](#) training required by DOT for HazMat transportation. Instead, it supplements the [Hazardous Materials Transportation Program](#) which must be reviewed before using this Guide. Contact [IU Radiation Safety](#) for assistance with transporting radioactive materials, which are also not covered in this Guide.

To protect health, safety and the environment, as well as to ensure regulatory compliance, you must adhere to all requirements and limitations as instructed in this Guide for relocating hazardous materials under the following scenarios:

➤ Purpose

1. **Relocation:** Your operation uses hazardous materials, and is moving or expanding into a new space. This applies to moves involving University buildings on and off-campus, for both laboratory and non-laboratory operations.
2. **Laboratory Closure:** A laboratory is closing, resulting in surplus chemicals which other IU researchers on campus want to relocate for use in another laboratory.
 - If a researcher is separating from IU and wants to move chemicals from their IU lab to another University, that researcher **must contact IUEHS** at their respective campus for authorization and further information.

➤ Destination

- **Intra-building:** Moves which take place inside the same building. When materials can be transported between adjacent buildings without going outside, it is considered *intra-building* transport.
- **Inter-building:** Moves that require transporting hazardous materials between two, non-connected University buildings. These moves generally require a vehicle. However, they can be done using a cart if the following conditions are met:
 - The buildings are connected by interior tunnels or walkways, **or**
 - The buildings are near each other and accessible by gently-sloped, paved surfaces with low pedestrian and vehicle traffic.
- **Inter-campus:** Moves between two different Indiana University campuses (this scenario is rare).

➤ Mode of transport

- Cart – applies to intra-building and inter-building moves.
- Vehicle – applies to inter-building and inter-campus moves. *Limitations apply* and will be outlined in the following section.

* For the purposes of this Guide, the term hazardous materials includes both chemicals and biological materials that have the potential to harm human health or the environment.

SECTION 2

Transportation by Vehicle: General Requirements and Limitations

Due to safety and regulatory requirements, limitations exist for transporting hazardous materials by vehicle, which applies to inter-building and inter-campus moves for any type of operation. For laboratory moves, contractors hired to move equipment and furniture are typically not licensed, trained, or equipped to handle or move chemicals. In addition, ***University personnel are prohibited from transporting hazardous materials in a personal vehicle.***

In order to transport hazardous materials by vehicle for any reason without being subject to stringent Department of Transportation regulations, the materials must be:

- Owned by the University,
 - Properly packaged in accordance with [Attachment A](#) of this Guide,
 - Transported in a *University vehicle* (owned, leased, or rented) ***by authorized and fully trained Indiana University employees only.***
1. Because of these restrictions, IUEHS is the primary resource for inter-building/inter-campus moves for which vehicles must be used. A fee is charged at an hourly rate to recover labor costs, and is discussed prior to your move.
 2. If your inventory is small and/or low hazard you may choose to transport the materials yourself subject to the requirements of Section 4C of this Guide. If you choose this option, you must still notify IUEHS using the online [Hazardous Material Move Notification and Authorization Form](#) and receive authorization. If you do not regularly transport hazardous materials on campus, you will require HazMat employee training per the IUEHS Hazardous Materials Transportation Program.

Refer to [Section 4C](#) of this Guide for more information on specific requirements and limitations.

SECTION 3

General Procedures

The following procedures apply to hazardous materials moves for intra-building, inter-building, and inter-campus relocation, as well as laboratory closures or researcher separation resulting in surplus chemicals to transfer or dispose.

1. Notify IUEHS immediately:

A. Relocations (*Lab and Non-lab*)

Complete the online [Hazardous Material Move Notification and Authorization Form](#) as soon as you know your operation is relocating. This form provides IUEHS with key information about the move such as the primary contact and department; the starting location and destination by campus, building name(s), and room number(s); the move date(s); types of hazardous materials being moved, and any other pertinent factors involved.

The form also indicates if the move will require IUEHS or contractor assistance due to lack of resources (including trained employees), large or highly hazardous inventories, multiple move locations, etc. Once the form is received, a representative from your campus IUEHS office will contact you to schedule a firm date, review preparation procedures, and answer any questions. IUEHS requires a 30 day advanced notice for hazardous materials moves. This allows enough time to ensure adequate IUEHS resources are available or to choose and schedule an appropriate contractor. It is *strongly recommended* that you schedule the HazMat portion of the move on a different date than equipment and furniture.

Request a waste pickup for any materials that you will not be moving to your new location prior to the day of the move. Any materials that are left at the old location after the date of the move will be considered abandoned and IUEHS may charge the responsible department for their disposal.

B. Laboratory Closures

Complete the online [Researcher Departure/Lab Closeout Notification](#) as soon as you know:

- Your lab is shutting down, or
- A researcher is departing the University and will be leaving behind hazardous materials in an operational laboratory.

This form provides IUEHS with key information about the closing laboratory and also provides laboratory personnel with links to important information about procedures for properly decommissioning laboratory facilities and equipment as well as chemical management and waste disposal. See Section 3.25 of the [IU Laboratory Safety and Chemical Hygiene Plan](#) for specific materials that cannot be transferred to other users, and must be disposed as waste.

2. Evaluate Your Hazardous Materials Inventory

For hazardous materials moves, ensure that all containers for relocation are in sound condition, with tight fitting lids. **Note:** *Parafilm® and duct tape are not acceptable as substitutes for lids.* If a container does not have a lid or the lid cannot be secured, the material must be repackaged prior to the move. In addition, you may find unstable materials that will need special evaluation and removal by IUEHS or a contractor. Refer to the *Chemicals of Concern* list (below) for examples.

Per the IUEHS [IU Laboratory Safety and Chemical Hygiene Plan](#), hazardous materials moves and closure of any operation with hazardous materials require the clean out of old, outdated and unwanted materials, and waste containers. It is highly recommended that you use a central location to place waste items so

they can be easily inventoried for disposal. All waste materials must be disposed in accordance with the [IU Waste Management Program](#).

Request a waste pickup for any materials that you will not be moving to your new location prior to the day of the move. Any materials that are left at the old location after the date of the move will be considered abandoned and IUEHS may charge the responsible department for their disposal.

Chemicals of Concern

Contact IUEHS if you discover any potentially explosive or unstable materials. These include but are not limited to:

- Expired peroxide formers with visible signs of peroxide formation (needle like structures or crystals around lid or inside the container);
- Explosives or flammable solids that are explosive when dry including picric acid and 2,4 dinitrophenyl hydrazine;
- Nitrocellulose;
- Corrosive gases;
- Any compound that is considered reactive or explosive due to exposure to air, light, shock, friction, or heat; and
- Leaking containers of any hazardous material.

SECTION 4

A. Intra-Building Moves by Cart

This section applies to anyone who needs to move hazardous materials from one location inside a building to another inside the same building (*or connected, adjacent buildings*) because of a relocation or transfer of hazardous materials.

Intra-building moves do not typically require assistance from IUEHS. However, for unusual circumstances, assistance can be provided. A fee may be charged at an hourly rate to recover labor costs, and will be discussed prior to your move. Once the [Hazardous Material Move Notification and Authorization Form](#) has been submitted to IUEHS, and the chemical inventory has been evaluated for container condition and waste disposal, follow these procedures for moving hazardous materials to a new location:

1. Any IU employee that transports chemical or biological materials within the same building must have either *Hazard Communication Training* or *Laboratory Safety Training*, and be familiar with spill reporting and response procedures.
2. Segregate incompatible materials according to hazard (see [Attachment A](#) of this Guide).
 - a. Ensure all containers are closed, in sound condition and properly labeled to fully identify their contents.
 - b. Use secondary containment such as a box, deep tray or other means with cushioning to stabilize containers and prevent potential chemical releases.
3. Use a cart with containment lip for transporting any hazardous materials through hallways.
 - a. You may hand-carry up to two (total) containers in safety totes only (**Figure 1**) within the same building.
 - b. Use a freight elevator where available for moving hazardous materials within buildings. Avoid the use of stairs to transport hazardous materials throughout a building.

FIGURE 1: SAFETY TOTE EXAMPLE



B. Inter-Building Moves by Cart

This section applies to anyone who needs to move hazardous materials from one building to another building on campus for relocation or transfer of hazardous materials.

Inter-building moves by cart typically involve small volumes, and ordinarily do not require assistance from IUEHS. However, for unusual circumstances, IUEHS assistance or contractor recommendations can be provided. A fee is charged at an hourly rate to recover labor costs for IUEHS assistance, and is discussed prior to your move. Once the [Hazardous Material Move Notification and Authorization Form](#) has been submitted to IUEHS, and the chemical inventory has been evaluated for container condition and waste disposal, follow these procedures for moving hazardous materials to a new location:

1. Any IU employee that transports chemical or biological materials from one building to another by cart must have either *Hazard Communication Training* or *Laboratory Safety Training*, and be familiar with spill reporting and response procedures.
2. Segregate incompatible materials according to hazard (see [Attachment A](#)).
 - a. Ensure all containers are closed, in sound condition and properly labeled to fully identify their contents.
 - b. Place segregated, compatible materials into boxes with cushioning or divider inserts to keep bottles from tipping or rattling together during transport. Contact IUEHS at your respective campus if boxes or tubs are needed. A limited number *may* be available for loan on some campuses.
3. Use a cart with secondary containment for transporting any hazardous materials outside.
4. Use a freight elevator where available for moving hazardous materials in and out of buildings. Avoid the use of stairs to transport hazardous materials whenever possible.
5. Keep cart transport on paved surfaces such as sidewalks with low vehicular and pedestrian traffic whenever feasible. Do not push carts through grass, gravel, mulch, or other unstable surfaces. Do not push carts up or down steep slopes. If there is no path between the buildings where you will be relocating that meets these criteria, you will need to use a vehicle. See Section 2 and Section 4C of this Guide for more information.

C. Inter-Building Moves by Vehicle

This section applies to anyone who needs to relocate hazardous materials from one building to another on or off campus, or between two IU campuses (inter-campus).

In addition to the limitations and training requirements found in [Section 2](#), there are also specific limitations and packing requirements for relocating hazardous materials inventories by vehicle. For safety and liability reasons, strict adherence to these requirements is paramount.

- **Limits on the amount of HazMat that can be transported in a vehicle:**

Hazmat moves by vehicle are limited to a total of 15 gallons of liquid and 50 pounds of solid materials, excluding reactive materials (Hazard Class 4 in [Attachment A](#) of this Guide). There is a 5 pound limit for reactive materials, which is included in the total amount limit.

- **Prohibited Hazardous Materials:**

In case of an accident, leaking container or other potential release, the following materials are ***prohibited from vehicle transport***. You must contact IUEHS at your campus to make arrangements for transport of these materials if the need arises.

- Chemicals designated as posing a [Poison by Inhalation hazard \(PIH\)](#). Always refer to the SDS for highly toxic materials to ensure they are not a PIH.
- Gas cylinders unless they can be *secured and kept upright* inside the vehicle as is required for all cylinders.
- Any hazardous material in an open, unstable or leaking container.

- **Packaging Requirements**

All loose containers of hazardous materials for vehicle transport must be segregated and packed upright into boxes, in one layer, with cushioning. Buckets, carboys and other sturdy individual containers can be transported as-is as long as they are closed and in sound condition. They must be loaded in the vehicle away from incompatible materials, upright, and in a manner that prevents them from tipping over. Follow the guidelines in [Attachment A](#) of this Guide for additional general packing requirements.

SECTION 5

Tips for Success

Moving hazardous materials can pose a unique set of challenges. Using these tips can prevent confusion or frustration on moving day.

- One person (with a back-up when feasible) should be appointed to oversee and coordinate all HazMat-related activities for the move. This person should be trained in laboratory safety or hazard communication, and be familiar with the chemical and/or biological materials in the lab. This person should ensure that the procedures in this Guide are followed, and serve as the point of contact for IUEHS should any questions arise.
- Allow adequate time to evaluate your HazMat inventory, and discard any unwanted or waste materials in advance of the move.
- Begin looking for interim cold-storage space for refrigerated materials. All refrigerators must be empty for contractors to move them. Freezer units (-40 and -80) do not have to be emptied, but must be packed with packing paper to ensure no shifting will occur. IUEHS Biosafety personnel must give final authorization for any freezer containing biohazardous materials to be moved with materials inside.
- Obtain adequate packing materials (sturdy boxes, tape, cushioning material) and, if moving to a location in the same or adjacent building have enough sturdy carts, boxes or deep trays, etc. for secondary containment.

- It is strongly recommended that hazardous materials moves be scheduled on a different day than the general move for furniture and equipment. This eliminates competition for docks and freight elevators, as well as excessive foot traffic and crowding in the area of the move.

Attachment A

Hazardous Materials Move Chemical Segregation and Packing Guidelines

General Requirements

- *Always wear the appropriate personal protective equipment (PPE) when handling chemicals.* For laboratories, the minimum PPE is protective eyewear, lab coat, and chemically resistant gloves.
- Materials must be segregated by hazard. Incompatible materials or those posing a higher hazard must be packed separately. Pack all loose materials that are chemical in nature, including bleach and other cleaning products. Pack containers in a manner that prevents breakage. Ensure all lids are tightly sealed, and containers are in sound condition. For cart moves, metal and plastic containers that are in good condition do not need to be put in a box or tub as long as the cart has an adequate secondary containment lip.
- Boxes and tubs must be packed in a single layer with cushioning material. Boxes must weigh less than 50 pounds.
- Follow your campus emergency procedures for a chemical spill.
- Special arrangements must be made to move large volumes of biological materials. This can be indicated on the [Hazardous Material Move Notification and Authorization Form](#).

Segregation by Hazard



Flammable Liquids:

- Most flammable liquids can be packed together.
- Do not pack flammable acids and flammable bases in the same box.
- Compartmentalized boxes are ideal for packing flammable liquids.



Reactive Materials:

- Reactive materials must be separated by hazard and clearly marked. Examples include: sodium metal, phosphorus pentoxide, solid paraformaldehyde, sodium borohydride, etc.
- Ensure boxes of reactives are clearly marked.
- Separate water reactives, air reactives (pyrophorics), and flammable solids.



Oxidizers & Organic Peroxides:

- Solid and liquid oxidizers and organic peroxides can be packed in boxes or original shipping containers.
- Ensure boxes of oxidizers and organic peroxides are clearly marked.
- Separate oxidizers from organic peroxides.
- Separate oxidizers and organic peroxides from any other organic materials, especially flammable materials.

- Separate oxidizers from powdered metals.
- Separate hydrogen peroxide from metals and metal compounds.



Toxic Materials:

- Miscellaneous toxic and inert materials can be combined into boxes following the general packing guidelines of a single layer with cushioning, and weighing 50 pounds or less.



Corrosives:

- Pack corrosive materials according to their compatibility.
- Pack acids separately from bases.
- Pack organic acids separately from inorganic acids, and oxidizers (including nitric and perchloric acids).
- Pack cyanides and sulfides separate from acids.
- Separate acids from powdered metals.
- Compartmentalized boxes are ideal for packing corrosive liquids.

**Refer to a material's SDS and its label markings to determine its hazard class or general hazards. If you have questions, contact IUEHS.*