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EHS-458, MATERIALS OF TRADE (MOT) GUIDELINES

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1.0 Introduction

1.1 Purpose

The purpose of this guideline is to support the safe and compliant transport of Hazardous materials between Emory University campuses to directly support business purposes (i.e. clinical research or laboratory research). Certain hazardous materials can be transported by private motor carriers in small quantities because of the limited hazard they present. This guideline explains the MOT exemption and the responsibility of Emory Employees when transporting these materials.

1.2 Scope

This guideline is intended for Emory employees, including faculty, staff, and student employees who may need to transport hazardous materials for official University business.

This guideline does not apply to commercial carriers that transport hazardous materials on campus, relocation/movement of laboratories on or between Emory Campuses, or the relocation/movement of hazardous waste.

1.3 Definitions

Hazardous Material. A substance or material which has been determined by the United States Department of Transportation (U.S. DOT) to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce.

Materials of Trade (MOT). Materials of Trade are hazardous materials, other than hazardous 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); To support the operation or maintenance of a motor vehicle (such as a battery or gasoline); To directly support a principal business of a private motor carrier that is other than transportation by motor vehicle (such as landscaping, academic and laboratory research, plumbing, painting, pest control).

Packing Group (PG). A substance is assigned a packing group according to the degree of danger it presents. Packing groups have been developed for Flammable liquids (Class 3), Flammable Solids/Self-Reactive Substances/Self-Polymerizing Substances/ Water Reactive (Class 4), Oxidizers (Class 5), Toxic Substances (Class 6, Division 6.1), and Corrosives (Class 8):

- Packing Group 1 – High Danger
- Packing Group 2 – Medium Danger
- Packing Group 3 – Low Danger

Reportable Quantity (RQ). A reportable quantity is an amount of EPA listed material that if accidentally released outside of a facility pose a potential threat to public health or the environment. This type of release requires immediate notification to EHSO. Following notification, EHSO will determine the need to notify local, state, and federal authorities. EPA ranks hazardous substances based on their inherent properties. Hazardous substances are assigned a hazard ranking of high, medium, or low which corresponds to "RQ" levels. EPA's list of hazardous substances and reportable quantities can be found here: https://www.epa.gov/sites/production/files/2015-03/documents/list_of_lists.pdf

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1.4 Responsibilities

Environmental Health and Safety Office (EHSO)

- Oversee the transportation of hazardous materials.
- Determine if the requirements of the Hazardous Materials regulations apply and to what extent.
- Provide Emory personnel with knowledge of the Hazardous Materials regulations, MOTs regulations, quantity limitations, packaging requirements and marking and labeling requirements.
- Directly advise Emory personnel on application of MOT exceptions on a case-by-case basis.
- Inform when training is required for handlers and shippers of hazardous materials.

Directors, Supervisors and Managers/Principal Investigators (PIs)

- Identify tasks that will require personnel to transport a hazardous material.
- Ensure that all training requirements are met as determined by job activities.
- Provide necessary PPE and materials (including packing materials, labels and supplies) needed to safely transport hazardous materials.
- Outline and document expectations for personnel transporting hazardous materials.
- Provide SOPs to EHSO for evaluation before implementation.

Employees

- Complete all required safety training.
- Possess knowledge of MOT requirements, quantity limitations, packaging requirements and labeling requirements.
- Wear proper personal protective equipment when packaging hazardous materials.
- Transport hazardous materials in a safe manner to avoid injury and harm to oneself or another individual.
- Report all incidents to immediate supervisor and EHSO.

1.5 Training Requirements

The MOT regulations do not require formal training or retention of training records. However, personnel must be complete all training required for their job duties. Additionally, carriers must be aware that some hazard classes of material are incompatible. They cannot be placed into the same secondary container, box, or compartment. Carriers should refer to the Safety Data sheet for specific guidance on handling. The EHSO Chemical Storage Legend by Hazard Symbol is available for reference.

NOTE: MOT exceptions do not apply to radioactive materials, Biological Substance Category A materials or hazardous waste.

2.0 Quantity Limits for Hazardous Materials Being Transported as MOTs

A single vehicle cannot transport more than 200kg of MOTs. There are size limits for

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individual packages of hazardous materials. These size limits are assigned based on the material's hazard class and packing group:

- If a hazardous material is a high-hazard (Packing Group 1), the maximum amount of material in one package is 0.5kg (1lb) for solids or 0.5L (500ml) for liquids.
- If the hazardous material is a medium or lower hazard (Packing Group 2 or Packing Group 3) the maximum amount of material in each package is 30 kg (66lbs) for solids, or 30 L (8 gallons) for liquids.
- Compressed gas cylinders or other pressurized vessels must be transported by an Emory approved gas vendor.

3.0 Packaging and Marking Requirements for MOTs

MOTs have packaging and marking requirements that help to ensure they are transported safely.

- The packaging must be the manufacturer's original packaging or a package of equal or greater strength and integrity.
- The packaging must be marked with a common name or proper shipping name (such as "exempt human specimen", "diagnostic specimen", or "Dry ice")
- Packaging must be leak proof for liquids and gases and sift proof for solids
- Packages must be securely closed, secured against movement during transportation, and protected against damage
- Outer packaging is not required for containers that can be secured against movement using cages, bins, boxes, or compartments
- If the package contains a reportable quantity of a hazardous substance, it must be marked "RQ". Additional information on Reportable Quantities can be found here: (<http://www.epa.gov/ceppo/pubs/title3.pdf>)

3.1 Hazardous Materials Used as Refrigerants for Specimen

- All specimen must be triple packaged. For Category B materials, place a biohazard sticker on the outer packaging.
- Cryogenic liquids in Dewar flasks, insulated cylinders, insulated portable tanks must be designed and constructed so that the pressure will not exceed 25.3 psig are not subject to the regulations. The container must be marked as "liquid nitrogen".
- Dry ice must be transported in a container that is designed and constructed to permit the release of Carbon Dioxide gas. Improper packaging can result in a buildup of pressure that could rupture the package. The package must be labeled "Dry ice" or "Carbon dioxide, solid."

3.2 Responsibilities for Carriers During Transport of MOTs

- Personnel should try to use the least amount of refrigerant necessary to maintain the integrity of the materials during transport. The main concern is asphyxiation during transport while operating the vehicle. Liquid Nitrogen and Carbon Dioxide can displace the oxygen in the air and should be considered dangerous. Do not transport the package using the passenger area of the vehicle. Packages containing dry ice or liquid nitrogen need to be transported in the trunk or cargo compartment.

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- Materials must be properly labeled and the carrier must have knowledge of the materials being transported.
- Be prepared with a spill kit in each vehicle that is suitable for cleaning up the materials being transported. In general, this would consist of personal protective equipment (gloves, eye protection), absorbent materials, broom and dustpan, and bags to contain the spill debris. If refrigerant is used, then a pair of cryogenic gloves should be available in the vehicle
- Hazardous materials must not be taken on any form of public transportation. Carriers may utilize Emory University owned vehicles or the Emory University Shuttle. Personal vehicles may also be used but only when there is no other means of transporting the material.
- Packages must not be transported using *MARTA*, *Lyft*, *Uber*, or other means of public transportation.
- When utilizing the *Emory Shuttle*, carriers must accompany the package to its destination to ensure proper receipt of the hazardous materials. Packages should not be placed onto shuttles
- In the event of a motor vehicle accident, carriers operating a University owned vehicle will be covered the University's vehicle insurance policy. Carriers operating their personal vehicle must have personal auto insurance. It is strongly recommended that employees discuss coverage with their own insurance carriers
- Improper transport of hazardous materials can lead to serious injuries. It can also lead to inspections and citations by regulatory agencies. Consult with EHSO if there is any uncertainty regarding the transportation of MOTs.

Table 3.2.1 – Hazardous Materials Table for MOT Exception

To be a Material of Trade, the hazardous material must fit into any one of the following classes or divisions:

Hazard	DOT Class	Max Qty. by PG	Examples
Flammable Gases	Class 2, Division 2.1	PG I -220lb PG II – 220lb PG III – 220lb	Propane, acetylene
Non-Flammable Gases	Class 2, Division 2.2	PG I -220lb PG II – 220lb PG III – 220lb	Oxygen, nitrogen
Flammable and Combustible Liquid	Class 3	PG I – 1lb/1pt PG II – 66lbs/8 gallons PG III – 66lbs/ 8 gallons	Solvents, Paints
Flammable Solid	Class 4, Division 4.1	PG I – 1lb/1pt PG II – 66lbs/8 gallons PG III – 66lbs/ 8 gallons	Alkali Metals

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Hazard	DOT Class	Max Qty. by PG	Examples
Spontaneously Combustible (pyrophorics/self-heating)	Class 5, Division 5.1	PG II – 1oz. PG III – 1 oz.	
Oxidizer	Class 5, Division 5.1	PG I – 1lb/1pt PG II – 66lbs/8 gallons PG III – 66lbs/ 8 gallons	Bleach, Bleaching compounds
Organic Peroxide	Class 5, Division 5.2	PG I – 1lb/1pt PG II – 66lbs/8 gallons PG III – 66lbs/ 8 gallons	Peroxides
Toxic Material	Class 6, Division 6.1	PG I – 1lb/1pt PG II – 66lbs/8 gallons PG III – 66lbs/ 8 gallons	Pesticides
Biological Substance Category B (>1 container/package)	Class 6, Division 6.2	Inner Package – <1.1lbs/0.5L Total Package – <8.8lbs/4L	Diagnostic specimen Clinical Specimen
Regulated medical waste	Class 6, Division 6.2	Inner Package – <1.1lbs/0.5L Total Package – <8.8lbs/4L	Sharps containers
Corrosive Material	Class 8	PG I – 1lb/1pt PG II – 66lbs/8 gallons PG III – 66lbs/ 8 gallons	Acetic Acid
Miscellaneous	Class 9	PG I – 1lb/1pt PG II – 66lbs/8 gallons PG III – 66lbs/ 8 gallons	Dry Ice
Other Regulated Materials	ORMD	None	Nail polish, hair spray

4.0 References

- 49 CFR 173.6 – Materials of Trade exceptions.
- US Department of Transportation Pipeline and Hazardous Materials Safety Administration – Materials of Trade Basics.
- Washington University in St. Louis Environmental Health and Safety- Materials



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of Trade Exemption Policy.

5.0 List of Associated Documents

- EHSO Chemical Storage Legend by Hazard Symbol