OSEH Training for Shipping Materials with Dry Ice

1.0 INTRODUCTION

Dry ice is a hazardous material and is regulated by both the U.S. Department of Transportation (DOT) and the International Air Transport Association (IATA). Specific procedures are required for handling, packaging and shipping materials refrigerated with dry ice and this training must be documented.

Training is available on the OSEH website. The course BLS204 Shipping Regulations for the Shipping of Dry Ice is an on-line course intended to train individuals who package dry ice shipments in which **no other hazardous materials, infectious substances or diagnostic specimens are included**. This training must be documented and repeated every two years. Please contact OSEH at 763-6973 if you need assistance with classifying your shipment.

To receive credit for this course you must:

- Register on the OSEH website Safety Training Tab
- Review the course material
- Complete exam at the end of the course

2.0 TRAINING REQUIREMENTS

Federal regulations mandate training for all personnel handling dry ice shipments or signing any type of shipping documentation (such as a FedEx Airbill).

⚠️ Refresher training must be provided every two years.

These training requirements apply to all UM faculty, staff, employees, or students who perform any of the activities of the shipment process.

The shipment process includes:
1. **Packing, marking, and labeling** the dry ice packages for transportation
2. **Preparing or signing** airway bill.
3. **Loading or unloading** dry ice packages
4. **Receiving or forwarding** packages containing dry ice
3.0 HAZARD IDENTIFICATION

Dry ice is classified by DOT and IATA as a “miscellaneous” hazard, Class 9. Dry ice is considered hazardous during transportation for the following reasons:

1. **Explosion hazard**: Dry ice releases a large volume of carbon dioxide gas as it sublimes. If packaged in a container that does not allow for release of the gas, it may explode, causing personal injury or property damage.

2. **Suffocation hazard**: A large volume of carbon dioxide gas emitted in a confined space may displace oxygen and create an oxygen deficient environment.

3. **Contact hazard**: Dry ice is a cryogenic material that causes severe frostbite upon contact with skin.

4.0 PACKAGING REQUIREMENTS

Packaging dry ice properly minimizes the risk to personnel transporting the material. Dry ice must be shipped in compliance with IATA Packing Instruction 904. Shippers are compliant with the requirements of IATA Packing Instruction 904 when shipping in accordance with this procedure and utilize appropriate packaging in accordance with the manufacturer’s specifications. Note that many manufacturers have incorporated these criteria into certain models of diagnostic specimen and infectious substance packaging.

**Gas Venting**: Packages must allow for release of carbon dioxide gas and prevent a build-up of pressure that could rupture the package. Dry ice must never be sealed in a container with an airtight seal such as container with a threaded lid, bag or plastic cooler.

**Package Integrity**: A package containing dry ice must be free from damage and of adequate strength for intended use. It must be strong enough to withstand the loading and unloading normally encountered in transport. It must also be constructed and closed in order to prevent any loss of contents that might be caused by vibration or changes in temperature, humidity or altitude.

**Package Materials**: Do not use plastics that can be rendered brittle or permeable by the temperature of dry ice. Use commercially available packaging systems intended for dry ice shipments.

**Packaging Quantity Limits**: Packages must not contain more than 200 kg of dry ice.

**Carrier’s Airbill**: The carrier’s airbill must include the statement “Dry ice, Class 9, UN1845, number of packages X net weight of dry ice in kilograms. FedEx has a check box on their airbill to satisfy this requirement, see Figure 1. Other carriers use slightly different formats. Airbill’s created electronically must include the same information. Check the airbill to ensure this information is included prior to sending shipment.
Ship “From” and “To” Information - (“A” in Figure 1)
The full name and address of the shipper (“From”) and consignee (“To”) must be clearly printed on the airbill and must be the same as on the package.

Priority Service (“B” in Figure 1)
It is highly recommended that all packages with dry ice be shipped priority overnight whenever possible. Insulated containers will still sublimate an estimated 5 to 10 pounds of dry ice in a 24-hour period. Actual time frames will vary depending on the package used and volume and density of dry ice.

Packaging (“C” in Figure 1)
Identify the type of packaging used. Dangerous goods, including dry ice, cannot be shipped in FedEx boxes or packaging, as such “Other” would be marked on the FedEx Airbill.

Special Handling Section (“D” in Figure 1)
Dry ice is a dangerous good but a Shipper’s Declaration is not required. For FedEx Airbills, check the appropriate box.

Nature and Quantity of Goods
Check the Dry Ice box. (“E” in Figure 1)
Enter the total number of packages with dry ice and the net weight of dry ice per package in kilograms. (“E” in Figure 1)

5.0 MARKING AND LABELING

Labeling: The outermost container must be labeled with a hazard class 9 label, UN 1845, and net weight of dry ice in kilograms. See Figure 2 and Figure 3.

See Figure 4 for UPS Blue Dry Ice label. IMPORTANT NOTE FOR UPS SHIPMENTS. In addition to the UPS Blue Dry Ice label, a hazard class 9 label and the UN 1845 marking must also be on the package.

6.0 ADDITIONAL CARRIER REQUIREMENTS

Always inform the carrier that the package contains dry ice when scheduling the shipment. In addition to the requirements established by IATA for the transport of dangerous goods by air, specific carriers may have more stringent requirements. The shipper must contact their intended carrier and verify if the carrier has any additional requirements from those specified in this procedure. The following are additional limitations for a few common carriers which relate to shipment of dry ice.
FEDERAL EXPRESS (FEDEX) - FedEx has no additional restrictions for shipments of dry ice.

UNITED PARCEL SERVICE (UPS) - The following are the additional requirements and limitations for UPS:

Contracted Services
Shipments of dry ice and other dangerous goods without an approved contract with UPS are prohibited. Shippers must establish contracted services with UPS in order to ship dangerous goods.

7.0 ADDITIONAL INFORMATION

- **Do not** write “specimens” or “diagnostic specimens” on the outer box. Diagnostic specimens are subject to specific packaging and training requirements that are not covered in this guidance document. Please contact OSEH at 763-6973 if you have any questions regarding classifying your shipment.

- You may choose to reuse a dry ice shipping box for future shipments. Ensure all markings, labels, addresses, barcodes and carrier labels are defaced. Use caution if reusing a box that had previously been used for shipments of infectious substances or diagnostic specimens. Only reuse a box if you can personally verify it is not contaminated and its integrity is intact.

- Ensure all samples are secured so that they cannot move freely inside the package when the dry ice sublimates. Use cardboard dividers or Styrofoam to separate samples. Fragile containers such as glass tubes or vials must be individually wrapped or separated so as to prevent contact between them.

- Minimize the volume of air to which the dry ice is exposed in order to slow the rate of sublimation. If there is any air space after filling the package, fill it with additional packing materials such as peanuts or crumpled paper.

- Shipments are generally recommended to contain 5-10 pounds (2.27-4.54 kg) of dry ice per 24 hours. Refer to package manufacturer’s recommendations for the correct amount of dry ice to use for your shipment.

- The sender should coordinate logistics of the shipment with the recipient. Take into account local holidays or closings that might delay package receipt.
Reduce the possibility of unauthorized access, possession, and use of hazardous materials by securing all hazardous materials, including dry ice. The following general guidelines represent minimum requirements:

- Limit information concerning hazardous materials shipments to authorized employees, carrier personnel, and supervisors. Do not share information on dangerous goods shipments with casual acquaintances or strangers.

- Limit access to areas where dangerous goods packages or other hazardous materials are prepared for shipment, received, stored, unpacked or used to authorized employees only.

- Packages containing dangerous goods must be kept in a secure area, or under the supervision of a designated shipper, or other authorized employee(s) until picked up by the carrier.

- Make sure the carrier picking up dangerous goods shipments has identification (e.g. company ID, uses a clearly identified company vehicle, or wears a company uniform).

- Report suspicious individuals and behavior, stolen or missing hazardous materials and/or hazardous materials packages, and known or suspected unauthorized entry into secured areas to your supervisor and to the Department of Public Safety.

- Report latches and locks on doors or other security devices that are damaged, or evidence of being tampered to your supervisor and the Department of Public Safety.

- Be aware of your surroundings; look for out-of-place vehicles and abandoned or out-of-place backpacks, bags, or other containers.