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# Shipping Dry Ice Training

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# Training Requirements

- Federal law requires that anyone who wants to ship dry ice (or any other hazardous material) must have the appropriate shipping training.
- If you are going to package dry ice for shipment or sign any type of shipping documentation (such as a FedEx Airbill) for a dry ice shipment, you must follow the training certification requirements outlined below.
  - **Read this PowerPoint presentation.**
  - **Submit your quiz to EH&S.**
  - **Upon successful completion of quiz, EH&S will certify you to ship dry ice for a period of 2 years.**
- Your certification must be renewed every two years.

# Purpose

- Dry ice is a hazardous material and as such it is regulated for shipment by the United States Department of Transportation (USDOT) and the International Air Transport Association (IATA).
- Regulations require that specific procedures must be followed when shipping dry ice.
- This training outlines the procedure to follow when your shipment includes **no hazardous materials other than dry ice.**



## Call EH&S

If your intent is to ship unregulated material of biological origin on dry ice (e.g., DNA, RNA, proteins, etc.) or you are uncertain as to whether or not your samples are regulated, please contact Environmental Health and Safety (EH&S).



# Hazard Identification

**Dry ice is classified by DOT and IATA as a “miscellaneous” hazard, class 9. Dry ice is considered hazardous for three reasons:**

- Explosion hazard: dry ice releases large volumes of carbon dioxide gas as it sublimates. If packaged in a container that does not allow for release of the gas, it may explode, causing personal injury or property damage.
- Suffocation hazard: a large volume of carbon dioxide gas emitted in a confined space can create an oxygen deficient atmosphere.
- Contact hazard: dry ice is a cryogenic material that causes severe frostbite upon contact with skin.

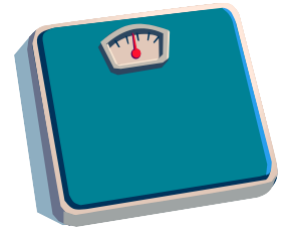
# Hazard Identification

- To eliminate the explosion hazard, you must use a package designed to vent gaseous carbon dioxide.
- Suffocation and contact hazards with the dry ice will be reduced by labeling the package correctly, so those who come in contact with it will be aware of the hazard.



# Hazard Identification

- Make sure that your training is current.
  - Within 2 years
- Ensure that packages are free from damage and conform to Packing Instruction 904.
- Ensure that the quantity of dry ice does not exceed 200kg (per package).
- Wear gloves or other appropriate personal protective equipment when handling dry ice.



# Air Waybill

- Most shipments of dangerous goods must be accompanied by two shipping documents
  - Air Waybill
  - Shipper's Declaration for Dangerous Goods
    - The Declaration for Dangerous Goods is not required for dry ice only packages
- For domestic shipments containing Dry Ice as the only dangerous good, just the Air Waybill is required.



# Packaging and Dry Ice

- Packaging Instructions (PI) for Dry Ice (PI 904)
  - After Jan 2011 use PI 954
- Packing Instruction 904 specifies that the outside of the package be marked with the net weight of Dry Ice contained in the package. This weight must be given in units of kilograms in order to be accepted by Federal Express and other carriers.
- Place tape only as directed by either the packaging manufacturer's instructions or where it will not interfere with gas release.
- Dry ice must never be put in a container with an airtight seal.

# Packaging and Dry Ice

- Packages containing dry ice must be of adequate strength and strong enough to withstand the handling normally encountered in transport.
- Packages must be constructed of a durable material and closed in order to prevent any loss of contents that might be caused by vibration or by changes in temperature, humidity, or altitude.
- Use commercially available packages intended to contain dry ice. Do not use plastics that can be rendered brittle or permeable by extreme temperature changes.

# Packaging

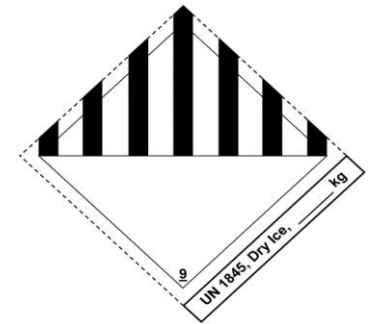
- Secure your samples so that they do not move freely inside of the insulated box.
- Fragile containers such as glass tubes or vials should be wrapped with cushioning material.



# Packaging and Dry Ice

## Required markings and labeling of outermost container with:

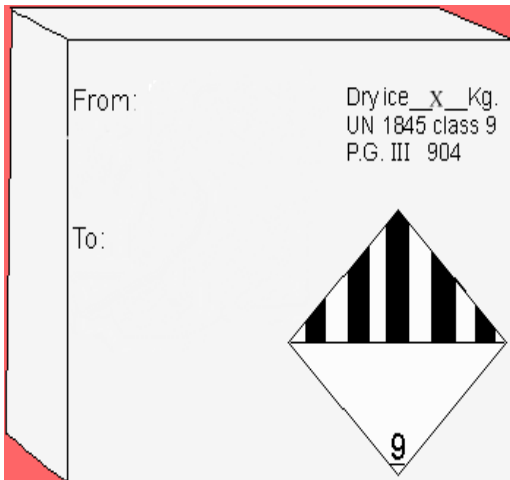
- A hazard class 9 label
- The words: UN 1845, Dry Ice or  
UN 1845 (Carbon dioxide, solid)
- Write on the label:
  - the net weight of dry ice in kilograms.
  - the full name, address and telephone number of shipper and consignee.



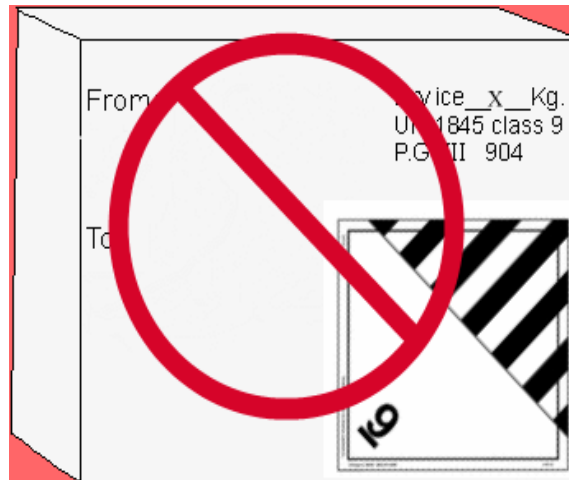
# Marking and Labeling

The label should be affixed to a vertical side of the box (not the top or bottom) and oriented as a diamond.

Correct



Wrong



# Marking and Labeling

- If reusing a package, all irrelevant or old markings and labels MUST be removed or obliterated.
  - ie: Address, old FedEx label, barcodes and hazard labels.
- If you plan on reusing a package, thoroughly inspect the package for both structural integrity and contamination from previous shipments.
- Damaged and/or contaminated boxes that are torn, cut, stained, or if the insulation is cracked or broken should not be used and may be rejected by the carrier.



# Documentation

- The Airbill must have:
  - Dry ice, 9, UN1845, *number of packages X net weight of dry ice in kilograms.*
- FedEx already has this information typed, you just need to check the appropriate box and write or type in the amount of dry ice.

The image shows a FedEx USA Airbill form. The top left features the FedEx logo and 'USA Airbill' text. A tracking number '834163798110' is visible. The form is divided into several numbered sections: 1. From (Sender's Name, Address, City, State, ZIP, Date, Sender's FedEx Account Number, Phone); 2. Your Internal Billing Reference; 3. To (Recipient's Name, Address, City, State, ZIP, Phone); 4. Express Package Service (checkboxes for Priority Overnight, Standard Overnight, First Overnight, 2Day, Express Saver); 4b. Express Freight Service (checkboxes for 1Day Freight, 2Day Freight, 3Day Freight); 5. Packaging (checkboxes for Envelope, Pak, Other); 6. Special Handling (checkboxes for Fragile, Hazardous, etc.); 7. Payment Bill to (checkboxes for Sender, Recipient, Third Party, Credit Card, Cash/Check); 8. Release Signature. A red banner at the bottom left says 'Try online shipping at fedex.com'. A small box at the bottom right contains the number '446'.



## Carrier

Do not send dry ice via UPS or US Postal Service who have restrictive policies when transporting shipments of hazardous materials.



Dry ice shipments can be sent using FedEx.





## Not Subject to IATA Regulations

- Material that does not contain pathogens or only contains inactivated or neutralized pathogens.
- A biological product derived from living organisms and manufactured for use in the prevention, diagnosis, treatment or cure of diseases in humans or animals and are certified by the USDA, FDA, or other national authority (e.g., certain viruses, therapeutic serums, certain toxins, vaccines).
- Dried blood spots or fecal occult screening tests.
- Blood or blood components collected for the purpose of transfusion.
- Tissue or organs for use in transplantation.
- *NOTE: These materials are not subject to IATA regulations, but primary or secondary containers must be marked with a biohazard symbol.*



## You can Ship Dry Ice Packages if:

- You have taken and passed the shipping dry ice training.
- Your shipment includes *no hazardous materials other than dry ice*.



## ASK QUESTIONS

If you are not sure if the material you are sending is considered hazardous, contact EH&S at x3560.

Please complete the quiz: [Dry Ice Shipping Quiz](#)