



Transportation Development
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Basic Overview of Hazard Classes

What are Dangerous Goods

- Also referred to as “Hazardous Materials”, “Hazmat”, “DG’s”, “Restricted Articles”
- Definition (varies slightly by mode)
 - Any substance that presents a significant danger when transported...
- These “risks” are categorized into Hazard Classes
 - Hazard classes may vary slightly by mode, or country

Hazard Class Recognition

- **CLASS 1 - EXPLOSIVES**

- Divisions 1.1 - 1.6

- Examples: Cartridges for weapons, signal flares, safety fuses, dynamite, fireworks



- **CLASS 2 - GASES**

- Division 2.1 Flammable gas

- Examples: Butane, Hydrogen.



Hazard Class Recognition

- **CLASS 2 - GASES**

- Division 2.2 Non-flammable gas

- Examples: Liquefied nitrogen, helium.

- Division 2.3 Toxic gas

- Examples: Aerosols of low toxicity and tear gas devices are some toxic

- **CLASS 3 - FLAMMABLE LIQUIDS**



Hazard Class Recognition

- CLASS 4

- Division 4.1 Flammable solid

- Examples: Matches, sulphur

- Division 4.2 Spontaneously Combustible

- Examples: White or yellow phosphorus, magnesium diamide.



Hazard Class Recognition

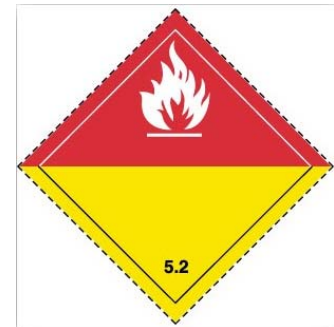


- Division 4.3 Dangerous When Wet
 - Examples: Calcium carbide, Sodium

- **CLASS 5 - OXIDIZING SUBSTANCES and ORGANIC PEROXIDES**



- Division 5.1 Oxidizer
 - Examples: Ammonium nitrate fertilizer, pool chlorine
- Division 5.2 Organic Peroxides
 - Examples: tert-Butyl hydrogen peroxide
 MEK peroxide



Hazard Class Recognition

- **CLASS 6 - POISONOUS (TOXIC) SUBSTANCES and INFECTIOUS SUBSTANCES**

- Division 6.1 Toxic substances
 - Examples: Nicotine, cyanide, arsenic.
- Division 6.2 Infectious substances
 - Examples: Diagnostic specimens, biological products



Hazard Class Recognition

- **CLASS 7 - RADIOACTIVE MATERIALS**
 - Examples: Medicines, instruments.
- **CLASS 8 - CORROSIVES**
 - Examples: Battery acids, Mercury.



Hazard Class Recognition

- **CLASS 9 - MISCELLANEOUS DANGEROUS GOODS**

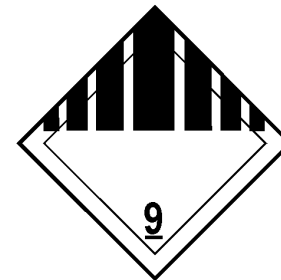
- Examples: Dry ice, Cosmetics, life rafts, asbestos, magnetized materials, Consumer Commodities, other regulated substances, internal combustion engines, motor vehicles and **Lithium Batteries!**



Example of lithium battery fires...



SHIPPING BATTERIES SAFELY BY AIR



What are the shipper's responsibilities?

- Identification
- Classification
- Packing
- Marking/Labeling
- Documentation
- Handling

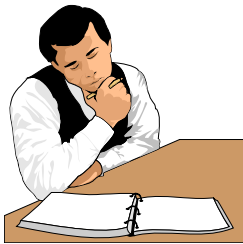


What are the shipper's responsibilities?

- Identifying DGs

- Use the correct Proper Shipping Name listed in the appropriate modal regulation

- Trade Names are not allowed i.e. “Acme Roach Bait” would not be an acceptable proper shipping name
- Pesticides, solid, toxic, n.o.s. would be the correct name
 - The Chemical name of the primary hazardous ingredient is also required.



What are the shipper's responsibilities?

- **Classifying DGs**

- The shipper must properly classify an item. It is their responsibility to:

- 1) correctly identify and classify an item into one of the nine hazard classes
- 2) determine any subsidiary risks
- 3) assign the item to one of the three Packing Groups, if applicable.

- Your product could fall into several hazard classes

What are the shipper's responsibilities?

- Packing
 - Use UN or other authorized packaging
 - multiple substances in one package must be compatible
 - Packaging materials must be compatible with the hazardous material being packaged

What are the shipper's responsibilities?

- Marking and Labeling
 - Apply the correct marks and labels to every package and overpack. Common marking requirements are:
 - Proper shipping name & Identification number
 - Shipper and/or consignee information
 - Handling Information (i.e. “this way up” label, Cargo Aircraft Only label)

What are the shipper's responsibilities?

- Documentation
 - DG's must be accompanied by shipping papers and a shipper's certification
 - All modes require this key information on DG paperwork:
 - Proper shipping name, Hazard Class, Identification number, and Packing Group (in that order)
 - Other information
 - Total Quantity, type of packaging, handling information. RQ for hazardous substances, Flash Point (ocean), Marine Pollutant (ocean)

What are the shipper's responsibilities?

- Documentation (Cont)
 - By air, the airlines require a completed IATA Dangerous Goods Declaration
 - By Ocean there is one standard IMO form, but several are used by various carriers
 - Shipping papers must be kept on file for at least 375 days

What are the shipper's responsibilities?

- Emergency Response Information

- 1) Telephone Number

- The Shipping papers must include a 24-hour emergency response telephone number (with area code and international access codes). This number must be monitored at all times by a person who:

- is knowledgeable of the hazards and characteristics of the substance being transported
- has comprehensive emergency response and accident mitigation information (or)
- has immediate access to a person who possesses such knowledge and information



What are the shipper's responsibilities?

- Emergency Response Information
 - Sometimes an emergency phone number **is not required**:
 - Note, under USG-12 in IATA and in 172.604(c) of 49-CFR, the emergency phone number requirement does not apply to shipments made under the “limited quantity” provisions of the regulations, nor does it apply to “Consumer Commodities”, “Battery powered equipment”, “Battery Powered Vehicle”, “Carbon dioxide solid”, “Castor beans, flakes, meal or pomace”, “Dry Ice”, “Engines, internal combustion (flammable gas powered or flammable liquid powered)”, “refrigerating machines”, and “vehicle (flammable gas powered or flammable liquid powered)”.

What are the shipper's responsibilities?

- Emergency Response Information
 - 2) Written Instructions on what to do in an emergency
 - This information must include as a minimum:
 - a. the description of the dangerous goods
 - b. immediate hazards to health
 - c. risks of fire or explosion
 - d. immediate precautions to be taken in the event of an accident or incident
 - e. immediate methods for handling fires
 - f. initial methods for handling spills/leaks in the absence of a fire
 - g. preliminary first aid measures

What are the shipper's responsibilities?

- **Emergency Response Information**

- 2) Written Instructions on what to do in an emergency

- This information must be printed in English, available away from the package, and immediately accessible in the event of an incident. This information can be relayed in the following manners, but not limited to:
 - including the information on the Shipper's Declaration for Dangerous Goods
 - locating the information in a separate document such as a material safety data sheet
 - providing the information in a separate document such as the Emergency Response Guide Book (you can always photocopy the correct guide page from the ERG and attach it to the shipping papers)

Important Note About New Phone Number requirements by carriers and other countries

- More and more countries and even carriers are requiring an emergency response phone number
 - Some of the requirements differ!
 - For example, LH now requires an emergency response phone number for ALL hazmat and does not make exceptions for dry ice, consumer commodity, LTD QTY, etc. as the DOT and IATA do.

What are the shipper's responsibilities?

- Handling
 - Proper segregation, compatibility, storage
 - There are major differences in segregation requirements depending upon mode of transport.
 - It makes one wonder, but “air” mode is in many ways the most lenient of all when it comes to cargo compatibility and stowage

What are the shipper's responsibilities?

- Training
 - Company officers are responsible for ensuring that every employee in the company is trained to an appropriate level.
 - Recurrent training must be no later than every two years (IATA) or 3 years (DOT)
 - US Airlines every one year
 - Training will be discussed in detail later



Responsibilities of shippers *and* offerors

- The forwarder is liable for many, if not MOST shipper errors
 - Improper documentation
 - Wrong labeling (i.e. no subsidiary risk) or use of the “Keep away from food” label
 - Wrong proper shipping name (shipper didn’t realize the entry was changed)
 - Incorrect package marking

Responsibilities of Forwarders

- Forwarder Reporting Requirements
 - This began January 1st, 2005
 - The freight forwarder (or trucker, customs broker, warehouse operator or other intermediary) must report undeclared hazmat shipments that are discovered after acceptance by the forwarder.
 - This is a brand new requirement that previously only applied to airlines.
 - This report must be made on DOT form 5800.1

Responsibilities of Forwarders

- The forwarder is NOT liable for
 - Concealed or undeclared DG's where it is not reasonable that the forwarder could have detected it.
 - Misidentified shipments where there is no likely way that the forwarder could have identified the error (i.e. a shipment of Gasoline is declared as Kerosene and non-restricted).
 - Use of the wrong INNER packagings (i.e. glass bottles Vs. plastic)

What about **importers**?

- Importers are required to notify their foreign suppliers of all the hazmat regs that will apply
 - Under 49 CFR, importers are required to notify their suppliers of the regulations that will apply when the shipment enters the united states.

What are the chances of getting caught?

- Airlines are required to turn you in!
- Customs officers are watching for violations and notifying the D.O.T. enforcement agencies.
- All shippers' export declarations (SED's) now identify if a shipment is hazardous!
- You, the shipper, are at the end of the audit trail.