

ELDT Hazmat Training

Introduction:

Hazardous materials are products that pose a risk to health, safety, and property during transportation. The term often is shortened to HAZMAT. The regulations require vehicles transporting certain types or quantities of hazardous materials to display diamond-shaped, square on point, warning signs. The regulations also require that drivers have special training before driving a vehicle transporting certain flammable gas materials or highway route-controlled quantities of radioactive materials, called placards.

The Intent of the Regulation:

Contain the Material:

Transporting hazardous materials can be risky. The regulations are intended to protect you, those around you, and the environment. They tell shippers how to package the materials safely and drivers how to load, transport, and unload the material. These are called "containment rules."

Communicate the Risk:

To communicate the risk, shippers must warn drivers and others about the material's hazards. The regulations require shippers to put hazard warning labels on packages, provide proper shipping papers, emergency response information, and placards. These steps communicate the hazard to the shipper, the carrier, and the driver.

Training:

The regulations require training and testing for all drivers involved in transporting hazardous materials at least once every three years.

Hazardous Materials Transportation—Who Does What

The Shipper

Must package, mark, and label the materials; prepare shipping papers; provide emergency response information; and supply placards. Certify on the shipping paper that the shipment has been prepared according to the rules.

The Carrier

Prior to transportation, checks that the shipper correctly described, marked, labeled, and otherwise prepared the shipment for transportation. Reports accidents and incidents involving hazardous materials to the proper government agency.

The Driver

Makes sure the shipper has identified, marked, and labeled the hazardous materials properly. Placards vehicle when loading. Refuses leaking packages and shipments.

Communication Rules

Shipping Papers:

Drivers to keep hazardous materials shipping papers: In a pouch on the driver's door, or in clear view within immediate reach while the seat belt is fastened while driving, or on the driver's seat when out of the vehicle.

Package Labels

Shippers put diamond-shaped hazard warning labels on most hazardous materials packages. If the diamond label won't fit on the package, shippers may put the label on a tag securely attached to the package.

Placards:

Placards are used to warn others of hazardous materials. Placards are signs put on the outside of a vehicle and on bulk packages, which identify the hazard class of the cargo. Placards must appear on both sides and both ends of the vehicle. To decide which placards to use, you need to know: (1) The hazard class of the materials. (2) The amount of hazardous materials shipped. (3) The total weight of all classes of hazardous materials in your vehicle.

Attach the appropriate placards to the vehicle before you drive it. You are only allowed to move an improperly placarded vehicle during an emergency, in order to protect life or property.

Hazardous Waste Manifest:

When transporting hazardous wastes, you must sign by hand and carry a Uniform Hazardous Waste Manifest.

The Hazardous Materials Table:

- Column 1 – Identifies shipping mode
- Column 2 – Proper shipping name
- Column 3 – Hazard Class
- Column 4 – Identification #; UN or NA
- Column 5 – Packing group
- Column 6 – Labels
- Column 7 – Special Provisions for shipping
- Column 8 – Packaging requirements

Appendix A - The List of Hazardous Substances and Reportable Quantities

You or your employer must report any spill of these materials, which occurs in a reportable quantity.

Appendix B – List of Marine Pollutants

a listing of chemicals that are toxic to marine life.

The Shipping Paper

Must include (1) page numbers, (2) Basic Description of each hazardous material, (3) A shipper's certification that the package has been prepared according to the rules.

The Item Description

If a shipping paper describes both hazardous and non-hazardous products, the hazardous materials must be: Entered first. Highlighted in a contrasting color, OR. Identified by an "X" placed before the shipping description.

The basic description of hazardous materials includes the identification number, proper shipping name, hazard class or division, and the packing group. The description must also show (1) number and type of packages, (2) RQ if reportable quantity, (3) Emergency Response phone number, (4) Emergency Response information for each hazard

Package Markings and Labels

Shippers print required markings directly on the package, an attached label. The requirements for markings are (1) The name and address of shipper or consignee, (2) The hazardous material's shipping name and identification number, and (3) The labels required.

Recognizing Hazardous Materials:

Other clues suggesting hazardous materials: What business is the shipper in? Paint dealer? Chemical supply? Scientific supply house? Pest control or agricultural supplier? Explosives, munitions, or fireworks dealer?

Placard Tables

There are two placard tables, Table 1 and Table 2. Table 1 materials must be placarded whenever any amount is transported. Except for bulk packaging, the hazard classes in Table 2 need placards only if the total amount transported is 1,001 pounds or more

TEST YOUR KNOWLEDGE:

1. Shippers package in order to:
 - a. Handle the product
 - b. Separate the product
 - c. Contain the material
 - d. Organize the product
2. Drivers placard their vehicle to:
 - a. Communicate the risk
 - b. Identify product
 - c. Keep others away
 - d. None of the above
3. When transporting hazardous materials, placards should be:
 - a. Lit up
 - b. On all four sides of the vehicle
 - c. Used only by Class A drivers
4. Who must mark and label the materials for shipping?
 - a. The carrier
 - b. The shipper
 - c. The driver
5. If a package of hazardous materials is too small to hold a label, it should be labeled:
 - a. With a tag
 - b. With a barcode
 - c. By being placed in a certain part of the trailer
6. An improperly placarded vehicle can only be moved:
 - a. To make room for other vehicles
 - b. In an emergency
 - c. If traveling less than 10 miles
7. If a driver is given a leaking package or shipment, they should:
 - a. Accept it
 - b. Refuse it
 - c. Leave it on the side of the road
8. Hazardous materials employees need to be trained at least:
 - a. Once a year
 - b. Once every 3 years
 - c. Once every 10 years
9. What three things do you need to know to decide which placards (if any) you need?
 - a. Material's hazard class.
 - b. Amount being shipped.
 - c. Amount of all hazardous materials of all classes on your vehicle.
 - d. All of the above
10. A hazardous materials identification number must appear on cargo tanks and other bulk packaging in addition to the following.

- a. Cargo Transport Vehicle
 - b. Shipping paper as part of the shipping description
 - c. On the package
 - d. Both A and C
11. Where must you keep shipping papers describing hazardous materials?
- a. In a pouch on the Driver's door
 - b. In clear view
 - c. Within immediate reach while the seat belt is fastened
 - d. On the driver's seat when out of the vehicle
 - e. All of the above
12. A manifest for transporting hazardous waste must be:
- a. Signed by hand
 - b. Sent Electronically
 - c. Attached to the outside of the trailer
13. A clue that your shipment contains hazardous materials is that:
- a. The shipper is in business of firework or munition dealing
 - b. The last shipment you pick up was labeled as hazardous
 - c. The packaging looks damaged
14. On a shipping paper describing hazardous and non-hazardous materials, the hazardous materials may be identified by being:
- a. Listed first
 - b. Highlighted in a contrasting color
 - c. Identified with an X in the HM column
 - d. All of the above

Loading and Unloading

Do all you can to protect containers of hazardous materials. Don't use any tools, which might damage containers or other packaging during loading. Don't use hooks. **No smoking within 25 feet of a class 1, 2.1, 3, 4, or 5 placarded vehicles.** Always secure the load against movement

Cargo Heater Rules:

The rules usually forbid use of cargo heaters, including automatic cargo heater/air conditioner units. Unless you have read all the related rules, **don't load the class 1, 2.1, or 3 products in a cargo space that has a heater/air conditioner.**

Precautions for Specific Hazards:

1. **Class 1 (Explosives)** - Use a floor lining with Division 1.1, 1.2, or 1.3. The floors must be tight and the liner must be either nonmetallic material or non-ferrous metal.
2. **Class 4 (Flammable Solid) and Class 5 (Oxidizers)** - must be completely enclosed in a vehicle or covered securely.
3. **Class 8 (Corrosive)** – Must consult the segregation table for classes 1.1, 1.2, 1.3, 1.4, 2.3, 4.1, 4.2, 4.3, 5, and 6.1.
4. **Class 2 (Compressed Gases)** - If your vehicle doesn't have racks to hold cylinders, the cargo space floor must be flat. The cylinders must be Held upright, In racks attached to the vehicle or in boxes that will keep them from turning over, and Cylinders may be loaded in a horizontal position (lying down) **if it is designed so the relief valve is in the vapor space and open.**
5. **Division 2.3 (Poisonous Gas) or Division 6.1 (Poisonous)** - Never transport these materials in containers with interconnections. Never load a package labeled POISON or POISON INHALATION HAZARD in the driver's cab or sleeper or with food material for human or animal consumption.

6. **Class 7 (Radioactive)** - Some packages of Class 7 (Radioactive) materials bear a number called the "transport index." The shipper labels these packages Radioactive II or Radioactive III, and prints the package's transport index on the label. Radiation surrounds each package, passing through all nearby packages. To deal with this problem, the number of packages you can load together is controlled. Their closeness to people, animals, and unexposed film is also controlled. The transport index tells the degree of control needed during transportation. The total transport index of all packages in a single vehicle must not exceed 50.

TEST YOUR KNOWLEDGE:

1. Around which hazard classes must you never smoke?
 - a. 1 Explosive and 2.1 Flammable Gas
 - b. 3 Flammable Liquid and 4 Flammable Solid
 - c. 5 Oxidizers
 - d. **All of the above**
2. Which three hazard classes should not be loaded into a trailer that has a heater/air conditioner unit?
 - a. 1 Explosives
 - b. 2.1 Flammable Gas
 - c. 3 Flammable Liquid
 - d. **All of the above**
3. What material should the floor liner required for Division 1.1 or 1.2 materials be made of?
 - a. Iron
 - b. **Aluminum or Non-Metallic**
 - c. Stainless Steel
4. At the shipper's dock you're given a paper for 100 cartons of battery acid. You already have 100 pounds of dry Silver Cyanide on board. What precautions do you have to take?
 - a. **Ensure battery acid will not spill**
 - b. Stack them on top of each other
 - c. None
5. Name a hazard class that uses transport indexes to determine the amount that can be loaded in a single vehicle.
 - a. 6.1 Poison
 - b. 1 Explosive
 - c. **7 Radio Active**
 - d. 8 Corrosive

Bulk Packaging Marking, Loading and Unloading

Cargo Tanks:

Cargo tanks are bulk packaging permanently attached to a vehicle. Cargo tanks remain on the vehicle when you load and unload them.

Portable Tanks:

Portable tanks are bulk packaging, which are not permanently attached to a vehicle. The product is loaded or unloaded while the portable tanks are off the vehicle.

Markings:

You must display the identification number of the hazardous materials in portable tanks and cargo tanks and other bulk packaging. Portable tanks must also show the lessee or owner's name. Intermediate bulk containers (IBCs) are bulk packages, but are not required to have the owner's name or shipping name.

Tank Loading:

The person in charge of loading and unloading a cargo tank must be sure a qualified person is always watching.

Flammable Liquids:

Turn off your engine before loading or unloading any flammable liquids. Only run the engine if needed to operate a pump.

Compressed Gas:

Keep liquid discharge valves on a compressed gas tank closed except when loading and unloading. Unless your engine runs a pump for product transfer, turn it off when loading or unloading.

TEST YOUR KNOWLEDGE:

1. What are cargo tanks?
 - a. Bulk packages permanently attached
 - b. Shipping Boxes
 - c. Bulk packages not permanently attached
 - d. Non-bulk packages permanently attached

2. How is a portable tank different from a cargo tank?
 - a. It's non-bulk packaging
 - b. They are loaded (filled) while on the vehicle
 - c. They are not permanently attached
 - d. None of the above

3. Your engine runs a pump used during delivery of compressed gas. True or False: You should you turn off the engine before unhooking hoses after delivery?
 - a. True
 - b. False

4. When loading compressed gas, the liquid discharge valve should be:
 - e. Open
 - f. Removed
 - g. Closed

Hazardous Materials – Driving and Parking Rules***Parking with Division 1.1, 1.2, or 1.3 Explosives:***

Never park with Division 1.1, 1.2, or 1.3 explosives within five feet of the traveled part of the road. Except for short periods of time needed for vehicle operation necessities (e.g., fueling), do not park within 300 feet of: A bridge, tunnel, or building, a place where people gather, or an open fire.

Safe Haven:

You are allowed to leave your vehicle unattended in a safe haven. A safe haven is an approved place for parking unattended vehicles loaded with explosives.

Parking a Placarded Vehicle Not Transporting Division 1.1, 1.2, or 1.3) Explosives:

You may park a placarded vehicle (not laden with explosives) within five feet of the traveled part of the road only if your work requires it. Do so only briefly.

Attending Parked Vehicles:

The person attending a placarded vehicle must: Be in the vehicle, awake, and not in the sleeper berth, or within 100 feet of the vehicle and have it within clear view. Be aware of the hazards of the materials being transported. Know what to do in emergencies. Be able to move the vehicle, if needed.

Route Restrictions:

Some states and counties require permits to transport hazardous materials or wastes. They may limit the routes you can use. Avoid heavily populated areas, crowds, tunnels, narrow streets, and alleys.

Refuel with Engine Off:

Turn off your engine before fueling a motor vehicle containing hazardous materials. Someone must always be at the nozzle, controlling fuel flow.

10 B C Fire Extinguisher:

The power unit of placarded vehicles must have a fire extinguisher with a UL rating of 10 B:C or more.

Check Tires

Make sure your tires are properly inflated. You must examine each tire on a motor vehicle at the beginning of each trip and each time the vehicle is parked.

Stop before Railroad Crossings:

Stop before a railroad crossing if your vehicle: Is placarded. Carries any amount of chlorine. Has cargo tanks, whether loaded or empty used for hazardous materials. You must stop 15 to 50 feet before the nearest rail.

Hazardous Materials – Emergencies

Emergency Response Guidebook (ERG):

The Department of Transportation has a guidebook for firefighters, police, and industry workers on how to protect themselves and the public from hazardous materials. The guide is indexed by proper shipping name and hazardous materials identification number.

Crashes/Incidents:

As a professional driver, your job at the scene of a crash or an incident is to:

1. Keep people away from the scene.
2. Limit the spread of material, only if you can safely do so.
3. Communicate the danger of the hazardous materials to emergency response personnel.
4. Provide emergency responders with the shipping papers and emergency response information.
5. Follow this checklist:
6. Check to see that your driving partner is OK.
7. Keep shipping papers with you.
8. Keep people far away and upwind.
9. Warn others of the danger.
10. Call for help.

Fires:

You might have to control minor truck fires on the road. However, unless you have the training and equipment to do so safely, don't fight hazardous materials fires. Dealing with hazardous materials fires requires special training and protective gear.

Never continue driving with hazardous materials leaking from your vehicle in order to find a phone booth, truck stop, help, or similar reason. If you discover a cargo leak, identify the hazardous materials leaking by using shipping papers, labels, or package location.

Responses to Specific Hazards

Always warn other of danger and keep bystanders away

Class 1 (Explosives):

Do not allow smoking or open fire near the vehicle. If there is a fire, warn every one of the danger of explosion.

Class 2 (Compressed Gases):

Only permit those involved in removing the hazard or wreckage to get close. You must notify the shipper if compressed gas is involved in any accident.

Class 3 (Flammable Liquids):

Keep them from smoking. Never transport a leaking cargo tank farther than needed to reach a safe place. Get off the roadway if you can do so safely. Don't transfer flammable to another on a public roadway except in an emergency.

Class 4 (Flammable Solids) and Class 5 (Oxidizing Materials):

Do not open smoldering packages of flammable solids. Remove them from the vehicle if you can safely do so. Also, remove unbroken packages if it will decrease the fire hazard.

Class 6 (Poisonous Materials and Infectious Substances):

It is your job to protect yourself, other people, and property from harm. Remember that many products classed as poison are also flammable. If you think a Division 2.3 (Poison Gases) or Division 6.1 (Poison Materials) might be flammable, take the added precautions needed for flammable liquids or gases. Do not allow smoking, open flame, or welding.

Class 7 (Radioactive Materials):

If radioactive material is involved in a leak or broken package, tell your dispatcher or supervisor as soon as possible. If there is a spill, or if an internal container might be damaged, do not touch or inhale the material. Do not use the vehicle until it is cleaned and checked with a survey meter.

Class 8 (Corrosive Materials):

If corrosives spill or leak during transportation, be careful to avoid further damage or injury when handling the containers. **Parts of the vehicle exposed to a corrosive liquid must be thoroughly washed with water.** After unloading, wash out the interior as soon as possible before reloading.

Required Notification:

The National Response Center helps coordinate emergency response to chemical hazards. It is a resource to the police and firefighters. It maintains a 24-hour toll-free line listed below. You or your employer must phone when any of the following occur as a direct result of a hazardous materials incident:

1. A person is killed.
2. An injured person requires hospitalization.
3. Estimated property damage exceeds \$50,000.
4. The general public is evacuated for more than one hour.
5. One or more major transportation arteries or facilities are closed for one hour or more.
6. Fire, breakage, spillage, or suspected radioactive contamination occurs.
7. Fire, breakage, spillage or suspected contamination occur involving shipment of etiologic agents (bacteria or toxins).
8. A situation exists of such a nature (e.g., continuing danger to life exists at the scene of an incident) that, in the judgment of the carrier, should be reported.

TEST YOUR KNOWLEDGE:

1. If your placarded trailer has dual tires, how often should you check the tires?

- a. Every 4 hours
 - b. Once per day
 - c. Beginning of each trip and when parked
 - d. Once per week
2. What is a safe haven?
 - a. Place to park unattended vehicles with Explosives
 - b. Place to go if you are in danger
 - c. Place to park in poor weather conditions
3. How close to the traveled part of the roadway can you park with Division 1.2 or 1.3 materials?
 - a. 5 feet
 - b. 10 feet
 - c. 15 feet
 - d. 20 feet
4. How close can you park to a bridge, tunnel, or building with the same load?
 - a. 5 feet
 - b. 50 feet
 - c. 100 feet
 - d. 300 feet
5. What type of fire extinguisher must placarded vehicles carry?
 - a. ABC
 - b. 10 B:C
 - c. A
 - d. CO2
6. You're hauling 100 pounds of Division 4.3 (dangerous when wet) materials. You must stop before a railroad-highway crossing?
 - a. True
 - b. False
7. At a rest area you discover your hazardous materials shipments slowly leaking from the vehicle. There is no phone around. What should you do?
 - a. Drive until you find a phone
 - b. Use shipping papers and labels to identify the leaking cargo
 - c. Park it and walk to find a phone
 - d. Both b and c
8. The identification numbers assigned to chemicals can be found in the:
 - a. DOT Emergency Response Book
 - b. Truck's manual
 - c. Periodic Table
9. As a driver, which of the following is not your job at the scene of an accident?
 - a. Keep people away
 - b. Put out fires
 - c. Warn others of danger
10. What is the Emergency Response Guide (ERG)?
 - a. Hazmat Regulations
 - b. Guide to protect the public from hazardous materials
 - c. Safety Data Sheet
 - d. All of the above

11. If Corrosive materials leak in a trailer, the trailer should be:
- a. Cleaned with acid
 - b. Cleaned with water
 - c. Left to air dry