

## How to Comply with Federal Hazardous Materials Regulations

*Note: Document downloaded on 11/2/2021. Grammatical errors updated by Florida Tech.*

This document provides only a general overview of the requirements for transporting hazardous materials by highway.

For more specific requirements, carriers and shippers should consult the most current edition of 49 CFR Parts 100-185. Motor carriers should also consult the Federal Motor Carrier Safety Regulations.

### TABLE OF CONTENTS

#### Contents

OVERVIEW.....	1
APPLICABILITY.....	2
HAZARDOUS MATERIALS SHIPPER RESPONSIBILITIES.....	4
HAZARDOUS MATERIALS CARRIER RESPONSIBILITY.....	5
HAZARDOUS MATERIALS.....	6
HAZARDOUS MATERIALS COMMUNICATIONS.....	8
HAZARDOUS MATERIALS TRAINING REQUIREMENTS.....	11
EMERGENCY RESPONSE INFORMATION.....	12
HAZARDOUS MATERIAL PACKAGING.....	14
COMPATIBILITY.....	17
APPENDIX A.....	17
APPENDIX B.....	19
APPENDIX C.....	20

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#### OVERVIEW

The Secretary of the Department of Transportation receives the authority to regulate the transportation of hazardous materials from the Hazardous Materials Transportation Act (HMTA), as amended and codified in 49 U.S.C. 5101 et seq. The Secretary is authorized to issue regulations to implement the requirements of 49 U.S.C. The Pipeline and Hazardous Materials Safety Administration (PHMSA) (formerly the Research and Special Provisions Administration (RSPA)) was delegated the responsibility to write the hazardous materials regulations, which are contained in 49 CFR Parts 100-180. In order to accomplish his responsibilities under the HMTA the Secretary "...may authorize any officer, employee, or agent to enter upon inspect, and examine, at reasonable times and in a reasonable manner, the records and properties of persons to the extent such records and properties relate to: (1) the manufacture, fabrication, marking, maintenance, reconditioning, repair, testing, or distribution of packages or containers for use by any "person" in the transportation of hazardous materials in commerce; or (2) the transportation or shipment by any "person" of hazardous materials in "commerce."

The hazardous materials regulations have changed significantly over the last several years. These changes were first introduced in Docket HM-181 which provided for the harmonization of the United States' hazardous materials regulations with international standards in order to facilitate foreign trade and maintain the competitiveness of U.S. goods.

The applicability of the hazardous materials regulations was extended to all intrastate shipments of hazardous materials by highway effective October 1, 1998, as published in the final rule, Docket HM-200 dated January 8, 1997. This final rule also provided exceptions for "materials of trade", "agricultural operations" and certain non-specification packaging used in commerce.

Special agents of the Department of Transportation cannot be denied reasonable access to those areas that fall within the official scope of their duties. The Secretary has delegated this authority to the Federal Aviation Administration (FAA), Federal Motor Carrier Safety Administration (FMCSA), Federal Railway Administration (FRA), Pipeline and Hazardous Materials Safety Administration (PHMSA), and the United States Coast Guard (USCG).

The Government Printing Office has made the [Federal Register](#) and [49 CFR](#) available on the Internet. Clarifications of the requirements are contained in the [Federal Hazardous Materials Regulations](#) and the [Motor Carrier Safety Regulations](#).

#### **APPLICABILITY**

The hazardous materials regulations are applicable to the transportation of hazardous materials in commerce and their offering to:

1. Interstate, intrastate, and foreign carriers by rail car, aircraft, motor vehicle and vessel.
2. The representation that a hazardous material is present in a package, container, rail car, aircraft, motor vehicle or vessel.
3. The manufacture, fabrication, marking, maintenance, reconditioning, repairing or testing of a package or container which is represented, marked, certified or sold for use in the transportation of hazardous materials (49 CFR 171.1(a))

#### **GENERAL DOT HAZARDOUS MATERIALS REGULATORY REQUIREMENTS**

"No person may offer or accept a hazardous material for transportation in commerce unless that person is registered in conformance with subpart G of Part 107 of this chapter, if applicable, and the hazardous material is properly classed, described, packaged, marked, labeled, and in condition for shipment as required or authorized..."(49 CFR 171.2(a))

Underlined in the preceding extract from the Hazardous Materials Regulations are three important terms; "person," "offeror" and "commerce" (See Appendix A Definitions). The word shipper is frequently used by industry in place of the word "offeror." For the purpose of this document only, the term shipper and "offeror" are used interchangeably. These three words are important in that they define when you are subject to the jurisdiction of the Department of Transportation. Additionally, you may be subject to the requirements of other Federal and/or State Laws.

#### **FEDERAL GOVERNMENT AND GOVERNMENT CONTRACTORS**

Most Federal Agencies including the Department of Defense are considered "offerors" when they ship hazardous materials by commercial carriers. In those rare instances where governmental agencies transport hazardous materials in commerce on government vehicles/aircraft, the agency is also

considered a carrier. Contractors are fully subject to the requirements of the Federal hazardous materials transportation law.

The Uniformed Services of the United States generally are not subject to the commerce clause of the Constitution. Therefore, military shipments, transported on military vehicles or aircraft are not subject to Federal jurisdiction. However, many states require military movements by highway to conform to 49 CFR or compatible state regulations. DOD and Service Regulations also require compliance with 49 CFR Parts 100-180. When in peacetime, the military services procure commercial transportation, (offering into commerce), the military is engaged in commerce and required to comply with 49 CFR

### **HM REGISTRATION**

"Persons" who offer for transportation, or transport in foreign, interstate or intrastate commerce: (a) any highway route controlled quantity of a Class 7 (radioactive) material; (b) more than 25 kg (55 lbs.) of a Division 1.1, 1.2, or 1.3 (explosive) material in a motor vehicle, rail car or freight container; (c) more than 1 L per package of a material extremely poisonous by inhalation; (d) a hazardous material in a bulk packaging having a capacity of 3,500 gals. for liquids or gases, or more than 468 cubic feet for solids; (e) a shipment in other than bulk packaging of 5,000 lbs. gross weight or more of one class of hazardous material for which the transport vehicle requires placarding; (f) any quantity of materials requiring placarding. The following are excepted from the registration requirement:

1. An agency of the Federal Government
2. A State Agency
3. An agency or political subdivision of a State
4. An employee of (1)-(3)
5. A hazmat employee (including an owner operator of a motor vehicle leased to a registered motor carrier for 30 days or more).
6. A person domiciled outside the United States who offers HM solely from outside the United States. (See 49 CFR 107.606(a)(6) for exceptions and reciprocity.)
7. Registration is required annually and includes a fee. For additional information on the registration requirement, you may call 1-800-467-4922 or (202) 366-4109.

### **HM PERMITTING - 49 CFR 385.400**

After January 1, 2005, the Federal Motor Carrier Safety Administration (FMCSA) requires motor carriers to obtain a Hazardous Materials Safety Permit (HMSP) prior to transporting certain highly hazardous materials. An HMSP is required to transport any of the following materials:

1. A highway route-controlled quantity of a Class 7 (radioactive) material;
2. More than 25 kg (55 pounds) of a Division 1.1, 1.2, or 1.3 (explosive) material or an amount of a Division 1.5 (explosive) material requiring placarding under 49 CFR 172;
3. More than one liter (1.08 quarts) per package of a "material poisonous by inhalation," that meets the criteria for "hazard zone A";
4. A "material poisonous by inhalation," that meets the criteria for "hazard zone B," in a bulk packaging (capacity greater than 460 L (119 gallons));
5. A "material poisonous by inhalation," that meets the criteria for "hazard zone C," or "hazard zone D," in a packaging having a capacity equal to or greater than 13,248 L (3,500 gallons); or

- 6. A shipment of compressed or refrigerated liquefied methane or liquefied natural gas, or other liquefied gas with a methane content of at least 85 percent, in a bulk packaging having a capacity equal to or greater than 13,248 L (3,500 gallons).

Motor carriers will be required to apply for a HMSP the next time they are scheduled to file the MCS-150 form after January 1, 2005. All motor carriers, including interstate, intrastate and foreign carriers must comply with this regulation. For more information you may call 202-366-6121.

**ENFORCEMENT**

The Modal Agencies have established their own programs to prioritize their inspection activities of transporters of hazardous materials. Pipeline and Hazardous Materials Safety Administration, in addition to the Modal Agencies have selection criteria for shippers; "offerors", that are similar i.e. (1) Investigation of known shipper violations discovered during carrier audits, (2) Non-frivolous written complaints alleging violations of the Federal Hazardous Materials Regulations, (3) NRC and DOT 5800.1, spill and hazmat incident reports, (4) Referrals from other governmental agencies and special investigations targeting high risk hazardous materials such as explosives and certain radioactive materials. In almost all instances these shipper inspections are unannounced.

In the event that inspection of your hazardous materials operations discloses violations of the hazardous materials regulations, you may be subject to civil and/or criminal penalties.

**PENALTIES PER VIOLATION 107.329**

<b>CIVIL</b>	MAXIMUM	\$79,976.00**
<b>CRIMINAL*</b>	<b>INDIVIDUAL</b>	<b>\$250,000.00</b>
	CORPORATION	\$500,000.00

\* MINIMUM \$481.00 if related to Training

\*\* \$186,610.00 if violation resulted in death, serious illness or severe injury to any person or substantial property damage

(Levels of fine from 18 U.S.C. and includes provision for imprisonment for not more than 5 years.) Although the Federal Government is exempt from the penalty provisions, (See definition of "person" on page 26 of this H.O.) employees of the federal government are not exempt under the HMTA.

**HAZARDOUS MATERIALS SHIPPER RESPONSIBILITIES**

<ul style="list-style-type: none"> <li>• DETERMINE WHETHER A MATERIAL MEETS THE DEFINITION OF A "HAZARDOUS MATERIAL"</li> <li>• PROPER SHIPPING NAME</li> <li>• CLASS/DIVISION</li> <li>• IDENTIFICATION NUMBER</li> <li>• HAZARD WARNING LABEL</li> <li>• PACKAGING</li> <li>• MARKING</li> </ul>	<ul style="list-style-type: none"> <li>• SHIPPING PAPERS</li> <li>• EMERGENCY RESPONSE INFORMATION</li> <li>• EMERGENCY RESPONSE TELEPHONE NUMBER</li> <li>• CERTIFICATION</li> <li>• COMPATIBILITY</li> <li>• BLOCKING AND BRACING</li> <li>• PLACARDING</li> <li>• SECURITY PLAN</li> </ul>
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• EMPLOYEE TRAINING	• INCIDENT REPORTING
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Listed above are the major responsibilities of HM shippers. General shipper responsibilities are contained in 49 CFR Part 173. Identification of a hazardous material is the first step, and frequently the most difficult. Of all the shippers' (offerors') responsibilities, the requirement to properly classify a hazardous material is very important. It is from the proper identification of the hazardous materials that the other requirements are based on. A list of all material regulated by the DOT is located in section 172.101

The current 49 CFR is consistent with the international requirements. However, there are some differences in the requirements for shipment by international air, international vessel, and shipments to and from Canada. The HMR addresses the requirements for the movement of shipments prepared in accordance with the international and Canadian regulations in 49 CFR sections 171.12 and 171.22.

**HAZARDOUS MATERIALS CARRIER RESPONSIBILITY**

- SHIPPING PAPER
- PLACARD AND MARK VEHICLE
- LOADING AND UNLOADING
- COMPATIBILITY
- BLOCKING AND BRACING
- INCIDENT REPORTING
- SECURITY PLAN
- EMPLOYEE TRAINING

This list above contains some of the major responsibilities of HM carriers. Carrier and offeror (shipper) responsibilities frequently overlap. When a motor carrier performs a shipper function, the carrier is responsible for performing that function in accordance with 49 CFR. The cargo space of the vehicle should be suitable for the material being shipped. The vehicle itself must be in sound mechanical condition. The carrier must check to ensure that the material offered by the shipper is properly described and packaged. In addition to the provisions of 49 CFR Parts 100-180, interstate motor carriers of placarded loads must comply with the hazardous materials requirements in 49 CFR Part 397.

**INCIDENT REPORTING**

Immediate notification of a hazardous materials incident by a carrier is required at the earliest practical moment for incidents that occur during the course of transportation (including loading, unloading, and temporary storage) in which as a direct result of the hazardous materials any one or more of the following occurs:

1. A person is killed;
2. A person receives an injury requiring admittance to a hospital;
3. The general public is evacuated for one hour or more;
4. A major transportation artery or facility is closed or shut down for one hour or more; or
5. Fire, breakage, spillage, or suspected radioactive contamination occurs involving a radioactive material;
6. Fire, breakage, spillage, or suspected contamination occurs involving an infectious substance other than a diagnostic specimen or regulated medical waste;

7. A release of a marine pollutant occurs in a quantity exceeding 450L (119 gallons) for a liquid or 400 kg (882 pounds) for a solid; or
8. A situation exists of such a nature (e.g., a continuing danger to life exists at the scene of the incident) that, in the judgment of the person in possession of the hazardous material, it should be reported to the National Response Center even though it does not meet the other criteria.

Each notice shall be given telephonically to the Department at (800) 424-8802. Incidents involving etiologic agents may be made to the CDC at (800) 232-0124. For content of report and additional information, please see 171.15.

A written report shall be submitted on DOT Form F 5800.1 for all incidents involving the transportation of hazardous materials unless excepted. Detailed reporting requirements are contained in 171.16.

### **HAZARDOUS MATERIALS TABLE**

Table of Hazardous Materials and Special Provisions

The purpose of the table is to assign proper shipping names, class and division, and guidance for packaging and handling requirements for hazardous materials. It is important to remember to read the instructions contained in front of table 172.101 when using this section. Many violations occur because individuals fail to review these instructions. Information that is available from the Table consists of: symbols that determine applicability, proper shipping name and shipping description, hazard class or division, identification number, packing group, label(s) required, special provisions, packaging authorizations, quantity limitations aboard aircraft, and vessel stowage requirements.

### **HAZARDOUS MATERIALS**

The definition of HAZARDOUS MATERIALS includes those materials designated by the Secretary of the Department of Transportation as posing an unreasonable threat to the public and the environment. The term "Hazardous Materials" includes all of the following: (1) Hazardous Substances, (2) Hazardous Wastes, (3) Marine Pollutants, (4) Elevated Temperature Material (5) Materials identified in 172.101, and (6) Materials meeting the definitions contained in Part 173.

HM REGULATED BY U.S. D.O.T.

### **CLASS 1 EXPLOSIVES**

DIVISION 1.1 MASS EXPLOSIVE HAZARD

DIVISION 1.2 PROJECTION HAZARD

DIVISION 1.3 MASS FIRE HAZARD

DIVISION 1.4 MINOR EXPLOSION HAZARD

DIVISION 1.5 VERY INSENSITIVE EXPLOSIVES

DIVISION 1.6 EXTREMELY INSENSITIVE EXPLOSIVES

Explosives were formerly classified as Class A, B, C or Blasting Agent. A comparison of the old and new classification system is contained in 173.53.

In addition to the change in classification systems we are now concerned with compatibility groups which are designated by alpha characters: 1.1A, 1.2D, etc. Information on the different compatibility groups are contained in 49 CFR 173.52.

### **CLASS 2 GASES**

DIVISION 2.1 FLAMMABLE GASES

DIVISION 2.2 NON-FLAMMABLE GASES

DIVISION 2.3 POISONOUS OR TOXIC

This class includes materials that are Compressed, Dissolved under Pressure, or Pressurized Cryogenic Liquids, and Liquefied Gases

**CLASS 3 FLAMMABLE LIQUID**

Includes materials whose Flash Point (FP) is not more than 141F

NOTE: See Combustible Liquids below

**CLASS 4 FLAMMABLE SOLIDS**

DIVISION 4.1 FLAMMABLE SOLID

DIVISION 4.2 SPONTANEOUSLY COMBUSTIBLE MATERIAL

DIVISION 4.3 DANGEROUS WHEN WET

**CLASS 5 OXIDIZING SUBSTANCES; ORGANIC PEROXIDES**

DIVISION 5.1 OXIDIZER

DIVISION 5.2 ORGANIC PEROXIDE

**CLASS 6 POISONOUS (TOXIC) AND INFECTIOUS SUBSTANCES**

DIVISION 6.1 POISONOUS (TOXIC) MATERIAL

DIVISION 6.2 INFECTIOUS SUBSTANCE

**CLASS 7 RADIOACTIVE MATERIAL**

**CLASS 8 CORROSIVES**

**CLASS 9 MISCELLANEOUS DANGEROUS GOODS \***

\*Category includes Environmentally Hazardous Substances, Elevated Temperature Material, Hazardous Wastes, and Marine Pollutants.

COMBUSTIBLE LIQUIDS Materials whose FP is greater than 141 F but less than 200EF are still regulated domestically as combustible liquids. Materials transported domestically only; whose FPs are 100 F up to 141 F may be reclassified as combustible in accordance with 173.120(b).

A COMBUSTIBLE LIQUID which does not sustain combustion is not subject to the requirements of the HMRs. See Appendix H, Part 173 for the required tests.

**ORM-D**

"ORM-D materials" are materials such as a consumer commodity, which although is subject to the regulations presents a limited hazard during transportation due to its form, quantity and packaging. Each ORM-D material and category of ORM-D material is listed in the 49 CFR 172.101 Table and 173.144.

**CONSUMER COMMODITIES**

Consumer commodities are materials that are packaged and distributed in a form intended for, or suitable for sale through retail sales. In order to determine if a particular hazardous material may qualify

as a consumer commodity, refer to the section number in Part 173 identified in column 8 of the 172.101 Table for that material.

#### **EXCEPTIONS:**

##### **Agricultural Operations**

The transportation of agricultural products (see 49 CFR 171.8) by highway may be excepted from some or all of the provisions of the Hazardous Materials Regulations when transported in accordance with the provisions of 49 CFR 173.5.

##### **Materials of Trade**

The transportation of materials of trade (see 49 CFR 171.8) by highway may be excepted from many of the requirements of the Hazardous Materials Regulations when transported in accordance with the procedures contained in 49 CFR 173.6.

#### **HAZARDOUS MATERIALS COMMUNICATIONS**

Part 172 of 49 CFR contains the hazardous materials communication requirements in addition to the hazardous materials table, emergency response requirements, training, and security plan. The term hazardous materials communications commonly refers to shipping papers, marking, labeling and placarding.

##### **Shipping Papers**

Shipping paper requirements are contained in 49 CFR Part 172 Subpart C. For the purpose of the hazardous materials regulations, a shipping paper is any shipping document whose purpose is to communicate a hazard and conforms to the requirements contained in this Subpart. Each person who offers hazardous materials for transportation shall describe the hazardous materials on a shipping paper that conforms to the requirements of the HMR. No carrier may transport a hazardous material unless it is accompanied by a shipping paper that is prepared in accordance with the HMR.

The description of hazardous materials on a shipping paper is contained in section 172.202. The basic description now includes proper shipping name, hazard class, identification number, and packaging group. The class names, IMO class and division numbers, or subsidiary hazard classes may be entered in parentheses. Entries are required for number and type packaging and weight (net or gross).

It is important to remember that except for materials in the U. N. Recommendations, the ICAO Technical Instructions, or the IMDG Code, a material that is not a hazardous material according to this sub-chapter may not be offered for transportation or transported when its description on a shipping paper includes a hazard class or an identification number specified in 49 CFR 172.101. This provision is most frequently violated when the shipments involve non-RCRA Waste, which is not considered DOT hazardous materials.

Depending on the material being transported additional information requirements to be entered on the shipping paper are contained in 49 CFR 172.203. Recent changes include entries for: Technical names for n.o.s. and other generic descriptions, Organic peroxides to include concentration, All poisonous materials subject to 172.203(m) where the poisonous constituent is not mentioned in the proper shipping name, for materials meeting the definition of poison-inhalation hazard, (see 171.8) "Poison-Inhalation Hazard" as provided in 172.203(m) and the words "Hazard Zone A," "Hazard Zone B," "Hazard Zone C" or "Hazard Zone D" as appropriate. (Also, see 173.133(b).)

The regulation requires an emergency response telephone number to be placed on the shipping paper. The telephone number must be monitored at all times when the material is in transportation to include storage incidental to transportation. The number must be of a person who is knowledgeable of the hazardous materials being shipped and the appropriate emergency response procedures, or a person who has immediate access to a person who has such knowledge. If you use the number for a service provider such as CHEMTREC you must have a valid contract in force with the service provider. This telephone number must be readily identifiable on the shipping paper.

A problem with some Bills of Ladings are the numerous emergency numbers for various types of problems, such as requests for delivery times or requests for safe havens. Emergency responders may have trouble identifying the DOT emergency response telephone number. The DOT does not dictate who signs the certification on the shipping papers. The individual who signs the certification should be the individual most knowledgeable of the shipment.

Public Law 103-311 amended 49 U.S.C. 5110 to require retention of hazardous materials shipping papers for 1 year.

### **Marking**

The requirements for marking of packages are contained in 49 CFR, Subpart D, Part 172. The basic marking requirement consists of the proper shipping name and identification number of the hazardous materials contained in the package. Markings should be durable, in English, and not obscured by other markings or labels. Depending on the material there may be additional marking requirements. For non-bulk packaging, technical names must be marked in parenthesis in association with the proper shipping name if required by 172.203(k). Identification numbers are not required for ORM-D and limited quantities.

Bulk packaging requirements are in section 172.302. Identification Numbers must be on each side and each end for packages 3785 L (1,000 gals) or more and for cylinders permanently mounted on tube trailer motor vehicles. Identification Numbers on two opposing sides for packages less than 3785 L (1,000 gals). Technical names are not required for bulk packages.

You may not offer or transport a container unless the HM markings apply to the material contained in the package. There is an exception for empty containers if: (1) In a vehicle or freight container, the package is not visible, and is loaded and unloaded by the shipper or consignee, or (2) The markings are securely covered during transport.

### **The following is a listing of additional marking requirements:**

Authorized Abbreviation	Elevated temperature material
Class 7 (radioactive) materials	Portable tanks
Liquid Hazardous Materials in Non-Bulk Packaging	Cargo tanks
Poisonous Hazardous Materials	Tank cars and multi-unit tank car tanks

ORM-D	Bulk packagings other than portable tanks, cargo tanks, tank cars, and multi-tank car tanks Identification number markings
Explosive Hazardous Material	
Marine Pollutant	
Hazardous Substances in non-bulk packagings	

## LABELING

General labeling requirements are contained in 49 CFR subpart E Part 172. Each person who offers for transportation or transports a hazardous material shall ensure the package is properly labeled. There are a number of exceptions to the labeling requirements contained in 172.400a. Prohibited labeling is contained in 172.401. The following is a list of additional requirements:

Additional labeling	Label Specifications
Class 7 (radioactive) material	There is a separate section for each of the authorized labels that gives an example of the label and describes the label. Sections 172.411 through 172.450 contain the required design for each label.
Labels for mixed and consolidated packagings	
Authorized label modifications	
Placement of labels	

## PLACARDING

General placarding requirements are contained in 49 CFR Subpart F Part 172. Each person who offers for transportation any hazardous materials subject to the HMR shall comply with the applicable placarding requirements. Applicability of placarding requirements 172.500: Placarding is not required for infectious substances, ORM-D, limited quantities, small quantity shipments, and combustible liquids in non-bulk packages. Placards may not be displayed on any packaging, freight container, unit load device, motor vehicle or rail car unless the placard represents a hazardous material loaded into or onto the conveyance unless the shipment is in accordance with the TDG Regulation, the IMDG Code or the UN Recommendations.

General placarding requirements are contained in 172.504. Each bulk packaging, freight container, unit load device, transport vehicle, or rail car containing any quantity of hazardous materials must be placarded on each side and each end with the placards specified in Tables 1 and 2.

172.504 contains a number of notes and exceptions to these requirements. When two or more Table 2 materials are contained in the same transport vehicle, the "Dangerous" placard may be used instead of the specific placard required for each hazard class. However, when 1,000 kg (2,205 lbs.) or more of a single category of HM is loaded on a transport vehicle, the placard specified for that material must be displayed.

172.504(c) contains an exception from the placarding requirement for shipments that contain less 454 kg (1,001 pounds) of Table 2 materials. A frequent problem encountered involves the 1,001 lbs. exception. The 1,001 lbs. is aggregate gross weight. Aggregate gross weight is the total weight of all

hazardous materials and its packaging loaded on a single transport vehicle. For example, if a vehicle has 1,500 lbs. of Class 3 materials and 50 lbs. of Class 8 materials, you would have to placard for both Class 3 and Class 8. There are additional requirements for placarding such as:

Placarding for subsidiary hazard	Bulk packages
Providing and affixing placards by Highway	Visibility and display of placards
Special placarding provisions by Highway	General specifications for placards
Providing and affixing placards by Rail	There is a section for each placard that gives an example and describes it.
Special placarding provisions by Rail	
Freight containers and aircraft unit load devices	

NOTE: FOR SPECIFIC REQUIREMENTS FOR PREPARATION OF SHIPMENTS YOU MUST USE THE MOST CURRENT EDITION OF 49 CFR.

**HAZARDOUS MATERIALS TRAINING REQUIREMENTS**

In addition to the communications requirements that took effect on October 1, 1993, hazmat employers must have trained hazmat employees hired prior to 07/02/93. For complete definition of hazmat employer and hazmat employee please see definitions contained in appendix A.

**TRAINING REQUIRED**

**General awareness/familiarization:** General awareness and familiarization training is intended to raise the hazmat employees' awareness of the HMR and the purpose and meaning of the hazard communication requirements. All hazmat employees must have this training.

**Function-specific training:** Function specific training is intended to teach the necessary knowledge, skills and abilities for an individual's job function.

**Safety training:** This training provides information concerning the hazards posed by materials in the workplace and personal protection measures. The training may include basic emergency response procedures but is not intended to satisfy the requirements of 29 CFR 1910.120.

**Security Training:** Each hazmat employee must receive security awareness training. This training must include an awareness of security risks associated with hazardous materials transportation and methods designed to enhance transportation security. After March 25, 2003, hazmat employees must receive this training at their next scheduled recurrent training, but in no case later than March 24, 2006. New hazmat employees must receive this training within 90 days of employment.

In addition to the above security awareness training, hazmat employees of employers that are required to have a security plan must receive in-depth security training on the security plan and its implementation.

**Modal specific requirements:** Any additional training required by 49 CFR PARTS 174, 175, 176, or 177. The regulation does not specify sources of training. The US Department of Transportation does not designate sources of training nor certify training courses, instructors and/or schools. It is the hazmat employer's responsibility to determine the adequacy of the training being presented. Training may be in any appropriate format including lecture, conference, self-paced instruction, interactive video, etc.

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### **INITIAL TRAINING**

A new hazmat employee who changes job functions may perform those functions prior to completion of training, provided the employee performs those functions under the direct supervision of a properly trained and knowledgeable hazmat employee; and the training is completed within 90 days after employment or job function.

### **RECURRENT TRAINING**

Employees must receive the required training every three years or any time there is a change in job function.

### **RECORDKEEPING REQUIREMENTS**

A record of current training, inclusive of the preceding three years, in accordance with this subpart, shall be created and retained by each hazmat employer for each hazmat employee for as long as that employee is employed by that employer as a hazmat employee and for 90 days thereafter. The record shall include: (1) The hazmat employee's name; (2) The most recent training completion date of the hazmat employee's training; (3) A description, copy or the location of the training materials used to meet the requirements; (4) The name and address of the person providing training; and (5) Certification that the hazmat employee has been trained and tested as required by this subpart.

The records required by this rule must be produced upon reasonable demand by an authorized employee of the Department of Transportation. Records may be in any format such as paper or electronic files as long as they contain the required information and are readily available.

Compliance with the current requirements for a CDL with a tank vehicle or hazardous materials endorsement provides a driver with the general knowledge and skills necessary to safely operate a commercial motor vehicle with hazardous materials cargo. This may satisfy the hazardous materials training requirements. As a hazmat employee, additional specialized training may be required based on the job function and material-specific requirements related to the handling of hazardous materials. The hazmat employer must determine the extent to which the CDL endorsement satisfies all training requirements.

### **EMERGENCY RESPONSE INFORMATION**

- THE EMERGENCY RESPONSE TELEPHONE NUMBER MUST BE MONITORED AT ALL TIMES WHILE THE SHIPMENT IS IN TRANSIT.
- EMERGENCY RESPONSE INFORMATION THAT MUST APPEAR ON THE SHIPPING PAPER OR IN A SEPARATE DOCUMENT MAINTAINED WITH THE SHIPPING PAPER:
  - DESCRIPTION OF THE HM
  - IMMEDIATE HAZARDS TO HEALTH
  - IMMEDIATE METHODS FOR HANDLING SMALL OR LARGE FIRES AND SPILLS OR LEAKS
  - PRELIMINARY FIRST AID MEASURES

The requirement for Emergency Response information is contained in 49 CFR, Part 172, Subpart G. The number must be maintained at all times that a shipment is in transit. The use of beepers, answering machines and switchboards is not authorized. The phone number must be to someone capable of providing information on the material.

Written emergency response information must be appropriate for the hazardous material being transported. If the carrier's equipment has an emergency response guide or similar document on board there is no requirement to provide a separate emergency response document.

For transportation by highway, if a transport vehicle contains hazardous materials for which a shipping paper is required and the transport vehicle is separated from its motive power and parked at a location other than a facility operated by the consignee, consignor, or carrier, the carrier shall (1) Mark the transport vehicle with the telephone number of the motor carrier on the front exterior near the brake hose or electrical connection; or (2) have the shipping paper and emergency response information readily available on the transport vehicle. This requirement does not apply if the identification number for each hazardous material contained therein is marked on the outside of the vehicle on an orange panel or white square on point placard.

#### **SECURITY PLANS**

The security plan requirements in Part 172 Subpart I of the Hazardous Materials Regulations (HMR) require each hazmat employer subject to the security plan requirements to establish and implement a security plan. The employer is also required to train their hazmat employees on the security plan. The purpose of these requirements is to enhance the security of hazardous materials transported in commerce. Employers must establish and implement their security plan by **September 25, 2003**, and by **December 22, 2003**, each employee must receive training on the security plan and its implementation.

*Security Plan Applicability.* Each person who offers for transportation in commerce or transports in commerce one or more of the following hazardous materials must develop and adhere to a transportation security plan for hazardous materials that conforms to the requirements of this subpart. As used in this section, "large bulk quantity" refers to a quantity greater than 3,000 kg (6,614 pounds) for solids or 3,000 liters (792 gallons) for liquids and gases in a single packaging such as a cargo tank motor vehicle, portable tank, tank car, or other bulk container.

1. Any quantity of a Division 1.1, 1.2, or 1.3 material;
2. A quantity of a Division 1.4, 1.5, or 1.6 material requiring placarding in accordance with subpart F of this part;
3. A large bulk quantity of Division 2.1 material;
4. A large bulk quantity of Division 2.2 material with a subsidiary hazard of 5.1;
5. Any quantity of a material poisonous by inhalation, as defined in §171.8 of this subchapter;
6. A large bulk quantity of a Class 3 material meeting the criteria for Packing Group I or II;
7. A quantity of desensitized explosives meeting the definition of Division 4.1 or Class 3 material requiring placarding in accordance with subpart F of this part;
8. A large bulk quantity of a Division 4.2 material meeting the criteria for Packing Group I or II;
9. A quantity of a Division 4.3 material requiring placarding in accordance with subpart F of this part;

10. A large bulk quantity of a Division 5.1 material in Packing Groups I and II; perchlorates; or ammonium nitrate, ammonium nitrate fertilizers, or ammonium nitrate emulsions, suspensions, or gels;
11. Any quantity of organic peroxide, Type B, liquid or solid, temperature controlled;
12. A large bulk quantity of Division 6.1 material (for a material poisonous by inhalation see paragraph (5) above);
13. A select agent or toxin regulated by the Centers for Disease Control and Prevention under 42 CFR part 73 or the United States Department of Agriculture under 9 CFR part 121;
14. A quantity of uranium hexafluoride requiring placarding under §172.505(b);
15. International Atomic Energy Agency (IAEA) Code of Conduct Category 1 and 2 materials including Highway Route Controlled quantities as defined in 49 CFR 173.403 or known radionuclides in forms listed as RAM-QC by the Nuclear Regulatory Commission;
16. A large bulk quantity of Class 8 material meeting the criteria for Packing Group I.

*Exceptions.* Transportation activities of a farmer, who generates less than \$500,000 annually in gross receipts from the sale of agricultural commodities or products, are not subject to this subpart if such activities are:

1. Conducted by highway or rail;
2. In direct support of their farming operations; and
3. Conducted within a 150-mile radius of those operations.

## **HAZARDOUS MATERIAL PACKAGING**

### **What is Performance Oriented Packaging?**

It is a packaging construction system based on performance standards developed in the form of Recommendations by the United Nations Committee of Experts on the Transport of Dangerous Goods (UN Recommendations). The UN standards have general requirements for materials, construction and a maximum capacity. Containers must pass or be capable of passing a series of performance tests before they are authorized for the carriage of hazardous materials. The international standards have general requirements for materials, construction and a maximum capacity as compared to detailed DOT specifications for non-bulk packaging formerly contained in 49 CFR, Part 178.

Packaging requirements are based on the Packing Group of the material, its vapor pressure, and chemical compatibility between the package and the HM. Non-bulk packaging standards are based upon a number of performance tests. In addition to UN Recommendation performance-oriented tests, a vibration test for non-bulk packaging is required domestically. Reuse of plastic and metal drums based on minimum thickness requirements. (This substitutes for the lack of performance tests in UN standards with regard to puncture resistance, abrasion resistance and metal fatigue). Package manufacturers must provide written notification to customers of any specification shortfalls or steps to be taken to conform with applicable specification. Performance tests for UN packaging, including design qualification tests and periodic retests, are included in Part 178.

### **Packing Groups**

The packing group designated in the 172.101 Table, column 5, indicates the degree of danger presented by the material. The shipper is responsible for determining the appropriate packing group.

Packing Group	Degree of Danger
---------------	------------------

I	Great
II	Medium
III	Minor

If more than one packing group is indicated for an entry, the packing group for the HM is determined using the criteria in 49 CFR, Part 173, Subpart D.

### **Packaging Responsibilities**

General requirements are contained in 49 CFR 171.2(g). No person may represent, certify, mark, sell or offer a packaging or container as meeting the requirements of the HMR, governing its use in transportation of a hazardous material, whether or not it is used or is intended to be used for transportation of a hazardous material, unless the packaging or container is manufactured, fabricated, marked, maintained, reconditioned, repaired or retested, as appropriate, in accordance with the HMR.

The shipper's responsibility is to classify and describe the HM in accordance with Parts 172 and 173. The shipper must determine that the packaging or container is an authorized packaging, including all special requirements, and that the package has been manufactured, assembled and marked in accordance with the HMR. The shipper may accept the manufacturer's certification, specification, approval or exemption marking in determining the packaging compliance. Based on written instructions by the manufacturer [178.2(c)], the shipper performs all actions which need to be taken for the packaging to conform to the requirements of Part 178. The shipper must perform any packaging functions required by 173.24, 173.24a, and 173.24b for which the shipper is responsible such as filling limits, compatibility between the HM and container, and securing and cushioning.

It is the responsibility of the packaging manufacturer and the person who offers hazardous materials for transportation, to the extent that assembly functions including final closure are performed by the latter, to assure that each package is capable of passing the prescribed tests.

**Performance Tests** - The following tests are performed as appropriate for each type of package: Drop Test, 178.603; Leakproofness Test, 178.604; Hydrostatic pressure Test, 178.605; Stacking Test, 178.606; Cooperage Test for Bung-type Wooden Barrels, 178.607; Chemical Compatibility Test for Plastic Receptacle, 178.608; Vibration Standard, 173.24a(a)(5).

**NOTE:** Each section must be consulted to determine the applicable test for each type of container.

**PACKAGE TESTING** consists of the following: Design Qualification Testing, 178.601(c)(1); Periodic Retesting, 178.601(c)(2); Production Testing, 178.601(c)(3); Frequency of Periodic Testing, 178.601(e); Test Samples, 178.601(f).

The person who manufactures a package subject to the requirements of the hazardous materials regulations is responsible to ensure the package is in conformance with the requirements contained in 49 CFR, Part 178. When a package is required to be marked with a UN standard or DOT specification, the package must meet all the requirements of the regulation, including testing. The manufacturer or person certifying that the package is in compliance with Part 178 must inform in writing each person to whom the packaging is transferred of all requirements of Part 178 not met at time of transfer, and all actions that need to be taken for the package to conform to requirements of Part 178. The written

statements must be retained by the manufacturer for at least one year per 49 CFR 178.2(c). When filling packages with hazardous materials the shipper must comply with these written instructions.

### **Performance Oriented Package Marking**

The Manufacturer's Marking Requirement is contained in 49 CFR 178.503.

- The United Nations symbol.
- Packaging identification code consisting of:
  - Type of packaging
  - Material of construction
  - Category of packaging (when appropriate)
- A letter identifying the performance standard.
- X - Meeting packing group I, II and III tests.
- Y - Meeting packing group II and III tests.
- Z - Meeting only packing group III tests.
- Specific gravity or mass.

Specific gravity for packaging without inner linings designed to hold liquids rounded down to the first decimal for those non viscous liquids having a specific gravity greater than 1.2.

Maximum gross mass in kilograms for viscous liquids, solids, or inner packaging.

- A letter "S" for packaging intended only for solids or inner packaging, test pressure in kilopascals of the hydrostatic test pressure.
- The last two digits of the year of manufacture.
- The letters indicating the country of origin (e.g., "USA").
- The name and address or symbol of the person applying the marks.
- Other markings: Month of manufacture for plastic drums (1H) and jerricans(3H). May be marked in a different location. Minimum thickness of packaging material in millimeters (mm) for metal or plastic drums or jerricans intended for reuse. Tare weight preceded by "TW" for packaging intended for nitric acid.
- Reconditioned packaging. Items 1-6 and thickness in millimeters must be applied in a permanent manner able to withstand reconditioning.

The following additional markings are required:

Name of the country in which the reconditioning was performed.

Name and address or symbol of the reconditioner.

Month and last two digits of the year of reconditioning.

The letter "R".

The letter "L" for packaging passing a leakproofness test.

### **LOADING AND UNLOADING**

49 CFR Parts 174-177 contain additional modal requirements for transporting hazardous materials by rail, water, air and highway. Part 177 for highway contains a number of general and specific requirements for loading and unloading hazardous materials in 177.834-177.854.

### **BLOCKING AND BRACING**

Hazardous materials packages should be secured in a transport vehicle to prevent damage during transportation. The motor carrier is responsible for blocking and bracing HM for shipment by highway.

Therefore, a carrier who removes and or alters blocking and bracing material installed by the shipper is not necessarily in violation of federal law. If the hazardous materials leaks or spills during transport due to insufficient blocking and bracing, the motor carrier is at fault.

### **COMPATIBILITY**

Both shippers and carriers are responsible for compatibility. The requirement for shippers to comply with compatibility considerations is contained in 49 CFR 173.22. In order to determine compatibility for shipments by highway, shippers and carriers should refer to 49 CFR 177.848 - Segregation of hazardous materials.

This section applies to: Packages that require labeling, multi-compartmented cargo tanks, and portable tanks loaded in transport vehicles or freight containers. If a vehicle is to be transported aboard a vessel, other than a ferry, and is loaded with hazardous materials, that vehicle must meet the compatibility requirements of Part 176. Regardless of the hazard class, cyanide and cyanide mixtures cannot be transported with acids.

In order to determine compatibility, you are now required to be familiar with two tables which are: Segregation Table for Hazardous Materials is used for all materials. However, this table is only used for Class 1 materials when comparing Class 1 with other classes/divisions of hazardous materials. Compatibility Table for Class 1 (Explosive) Materials is used for determining compatibility for one Class 1 material and another Class 1 material.

When using the aforementioned tables be sure to read the entire section, 178.848, and be aware that there are special instructions and exceptions listed. In addition to this section, shippers and carriers should check sections 177.834 through 177.854 for any additional handling requirements.

### **APPENDIX A DEFINITIONS**

#### **AGRICULTURAL PRODUCT:**

An agricultural product means a hazardous material, other than a hazardous waste, whose end use directly supports the production of an agricultural commodity including, but not limited to a fertilizer, pesticide, soil amendment, or fuel. An agricultural product is limited to a material in Class 3, 8, or 9, Division 2.1, 2.2, 5.1, or 6.1, or an ORM-D material.

#### **COMMERCE:**

The term "commerce" means trade, traffic, commerce, or transportation within the jurisdiction of the United States.

(A) between a place in s State and any place outside of such State, or (B) which affects trade, traffic, commerce, or transportation described in subparagraph (A). 49 USC 5101 et seq.

#### **CONTRACTORS:**

Any person who, under contract with any department, agency, or instrumentality of the executive, legislative, or judicial branch of the Federal Government, transports, or causes to be transported or shipped, a hazardous material or manufactures, fabricates, marks, maintains, reconditions, repairs, or tests a package or container which is represented, marked, certified, or sold by such person as qualified for use in transportation of hazardous materials shall be subject to and comply with all provisions of the Federal Hazardous Material Transportation Law, or the regulations issued thereunder.

**HAZMAT EMPLOYER:**

A person who uses one or more of its employees in connection with: transporting hazardous materials in commerce; causing hazardous materials to be transported or shipped in commerce; or representing, marking, certifying, selling, offering, manufacturing, reconditioning, testing, repairing or modifying containers, drums, or packaging as qualified in the transportation of hazardous materials. This term includes an owner-operator of a motor vehicle which transports hazardous materials in commerce. This term includes any department, agency, or instrumentality of the United States, a State, a political subdivision of a State, or an Indian tribe described in the first sentence of this definition.

**HAZMAT EMPLOYEE:**

A person who is employed by a hazmat employer and who in the course of employment directly affects hazardous materials transportation safety. This term includes an owner-operator of a motor vehicle which transports a hazardous material in commerce. This term includes an individual, including a self-employed individual, employed by a hazmat employer who, in the course of employment: (1) Loads, unloads, or handles hazardous materials; (2) Manufactures, tests, reconditions, or repairs, modifies, marks, or otherwise represents containers, drums, or packages as qualified for use in the transportation of hazardous materials; (3) Prepares hazardous materials for transportation; (4) Is responsible for safety of transporting hazardous materials; or (5) Operates a vehicle used to transport hazardous materials.

**MATERIALS OF TRADE**

Materials of Trade means a hazardous material, other than a hazardous waste, that is carried on a motor vehicle--(1) For the purpose of protecting the health and safety of the motor vehicle operator or passengers; (2) For the purpose of supporting the operation of a motor vehicle (including its auxiliary equipment) or; (3) By a private motor carrier (including vehicles operated by a rail carrier) in direct support of a principal business other than transportation by a motor vehicle.

**OFFEROR:**

The term offeror means any person who performs, or is responsible for performing, any of the pre-transportation functions required under the HMR for transportation of a hazardous material; tenders or makes a hazardous material available to a carrier for transportation in commerce; or both performs, or is responsible for performing, pre-transportation functions and tenders or makes a hazardous material available to a carrier for transportation

**PERSON: As of 01/24/2005**

Person means an individual, firm, copartnership, corporation, company, association, or joint-stock association (including any trustee, receiver, assignee, or similar representative); or a government or Indian tribe (or an agency or instrumentality of any government or Indian tribe) that transports a hazardous material to further a commercial enterprise or offers a hazardous material for transportation in commerce. Person does not include the following:

1. The United States Postal Service.
2. Any agency or instrumentality of the Federal government, for the purposes of 49 U.S.C. 5123 (civil penalties) and 5124 (criminal penalties.).
3. Any government or Indian tribe (or an agency or instrumentality of any government or Indian tribe) that transports hazardous material for a governmental purpose.

**SHIPPER:**

The word "shipper" is not specifically defined in the HMR (49 CFR Parts 170-179), due primarily to the fact that it is not possible for the Department to account for the numerous commercial arrangements

that may exist under that concept, Although the word "shipper" does appear, it is used in an ordinary layman's manner rather than as a specific, technical term of art. Consequently, responsibilities generally are placed on "offerors" for performance of the functions associated with "offering" hazardous materials for transportation (e.g., see the general duty and applicability provisions in 49 CFR 171.1, 171.2, 172.3, and 173.1).

**TRANSPORTS:**

The term "transports" or "transportation" means any movement of property by any mode, and any loading, unloading, or storage incident thereto.

**TRANSPORTATION IN COMMERCE ON A PUBLIC HIGHWAY:**

Transportation on (across or along) roads outside of Government properties generally is transportation in commerce. If a road is used by members of the general public (including dependents of Government employees) without their having to gain access through a controlled access point, transportation on (across or along) a road on Government properties is in commerce. On the other hand, if access to a road is controlled at all times through the use of gates and guards, transportation on that road is not in commerce.

The COMMERCIAL MOTOR VEHICLE SAFETY ACT OF 1986 required DOT to establish Federal standards for States to test and license truck and bus drivers, establish uniform penalty provisions, and establish a data system containing data on drivers.

**COMMERCIAL DRIVERS LICENSE REGULATION APPLICABILITY:**

**THE RULES IN THIS PART APPLY TO EVERY PERSON WHO OPERATES A COMMERCIAL MOTOR VEHICLE IN INTERSTATE, FOREIGN, OR INTRASTATE COMMERCE AND TO ALL EMPLOYEES OF SUCH PERSONS.**

**COMMERCIAL DRIVERS LICENSE:**

*Does not* apply to active duty military drivers.

Does apply to Government Civilian Employees.

**MOTOR CARRIER SAFETY ACT OF 1990:**

A major provision of this legislation prohibits Federal agencies from using motor carriers rated unsatisfactory to transport hazardous materials in quantities requiring placarding.

SAFETY RATINGS AND CARRIER PROFILES are public information and may be obtained on the Internet on a system called SAFER (Safety and Fitness Electronic Record) at <https://safer.fmcsa.dot.gov/>

**APPENDIX B**

Eastern Resource Center VACANT 802 Cromwell Park Drive Suite N Glen Burnie, MD 21061 Com (443) 703-2240 Fax (443) 703-2253 Internet Address:	Mid-West Resource Center Kris Phillips 19900 Governors Drive, Suite 210 Olympia Fields, Illinois 60461-1021 Com (708) 283-3577 Fax (708) 283-3579 Internet Address: Kris.Phillips@dot.gov
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<p>Connecticut (860) 659-6700  Delaware (302) 734-8173  District of Columbia (202) 219-3553  Maine (207) 622-8358  Maryland (410) 962-4342  Massachusetts (617) 494-2770  New Hampshire (603) 228-3112  New Jersey (609) 637-4222  New York (518) 431-4145  Pennsylvania (717) 221-4443  Puerto Rico (787) 766-5985  Rhode Island (401) 431-6010  Vermont (802) 828-4480  Virginia (804) 771-8585  West Virginia (304) 347-5935</p>	<p>Illinois (217) 492-4608  Indiana (317) 226-7474  Iowa (515) 233-7400  Kansas (785) 267-7288  Michigan (517) 377-1866  Minnesota (651) 291-6150  Missouri (573) 636-3246  Nebraska (402) 437-5986  Ohio (614) 280-5657  Wisconsin (608) 829-7530</p>
<p>Southern Resource Center  David Ford  100 Alabama Street, 17th Floor  Atlanta, Georgia 30303-3104  Com (404) 562-3600  Fax (404) 562-3704  Internet Address:  David.Ford@dot.gov  Alabama (334) 223-7244  Arkansas (501) 324-5050  Florida (850) 942-9338  Georgia (404) 562-3620  Kentucky (502) 223-6779  Louisiana (225) 757-7640  Mississippi (601) 965-4219  New Mexico (505) 346-7858  North Carolina (919) 856-4378  Oklahoma (405) 605-6047  South Carolina (803) 765-5414  Tennessee (615) 781-5781  Texas (512) 536-5980</p>	<p>Western Resource Center  Richard Swedberg  Golden Hills Office Center  12600 W Colfax Ave Suite B-300  Lakewood, CO 80215  Com (303) 407-2350  Fax (303) 407-2339  Internet Address:  Richard.Swedberg@dot.gov  Alaska (907) 271-4068  Arizona (602) 379-6851  California (916) 930-2760  Colorado (720) 963-3130  Hawaii (808) 541-2790  Idaho (208) 334-1842  Montana (406) 449-5304  Nevada (775) 687-5335  North Dakota (701) 250-4346  Oregon (503) 399-5775  South Dakota (605) 224-8202  Utah (801) 963-0096  Washington (360) 753-9875  Wyoming (307) 772-2305</p> <p>Samoa (808) 541-2700  Guam (808) 541-2700  Northern Marianna (808) 541-2700</p>

**APPENDIX C**

**PUBLICATION SOURCES**

Copies of the regulations may be purchased from the nearest Government Printing Office Bookstore. You may also view an electronic version of the CFR at:<http://ecfr.gpoaccess.gov/>. For more information or to ask questions related to the hazardous materials regulations call 1-800-467-4922 or contact

PHMSA at:  
Pipeline and Hazardous Materials Safety Administration  
1200 New Jersey Avenue SE, PHH-50  
Washington, D.C. 20590-0001  
Internet PHMSA.DOT.GOV

<https://www.fmcsa.dot.gov/regulations/hazardous-materials/how-comply-federal-hazardous-materials-regulations#hmt>