Driven

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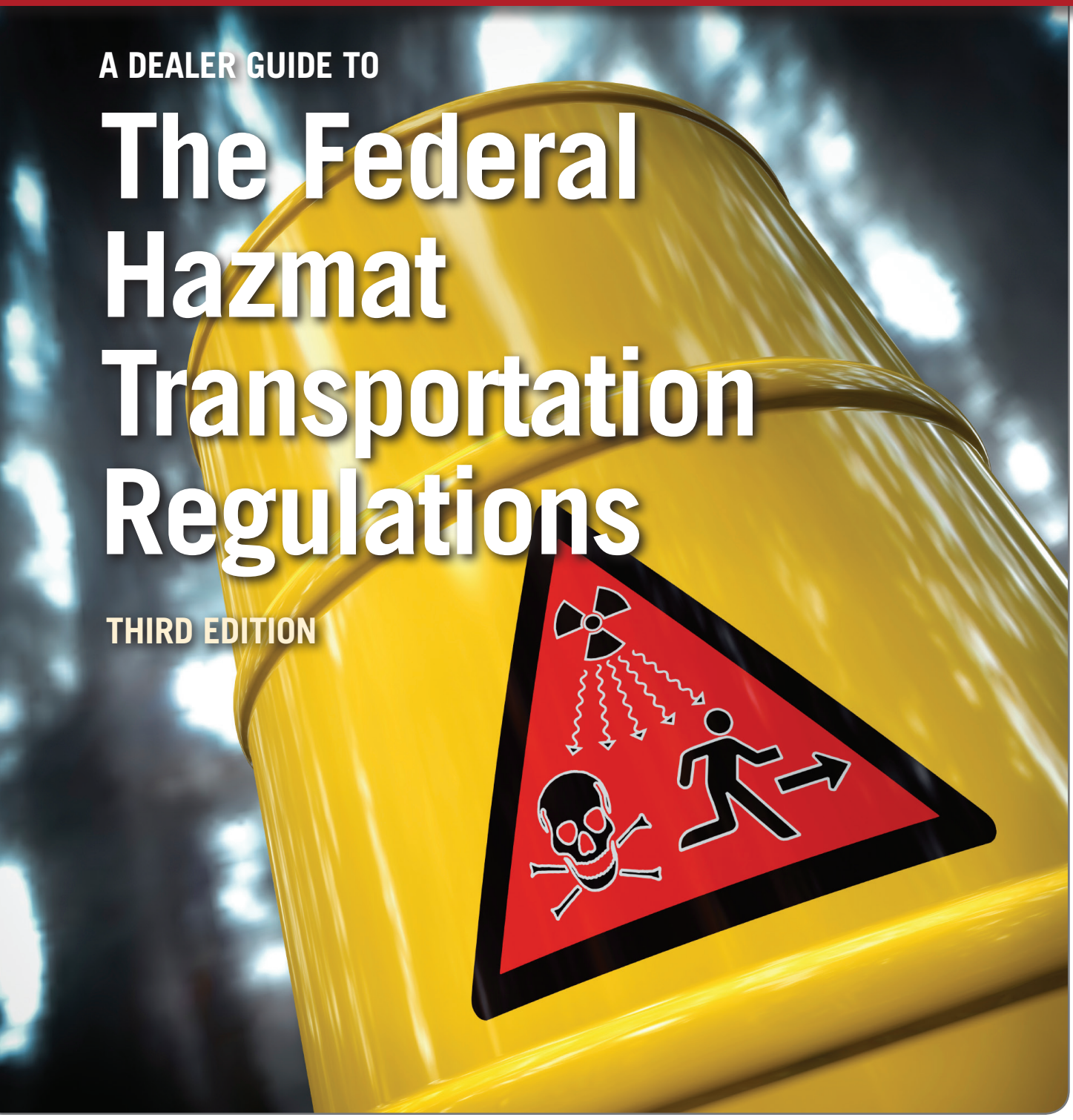

A DEALER GUIDE TO

The Federal Hazmat Transportation Regulations

THIRD EDITION

NADA NATIONAL AUTOMOBILE DEALERS ASSOCIATION

The National Automobile Dealers Association (NADA) has prepared this management guide to assist its dealer members in being as efficient as possible in the operation of their dealerships. The presentation of this information is not intended to encourage concerted action among competitors or any action on the part of dealers that would in any manner fix or stabilize the price or any element of the price of any good or service.

This guide is designed to provide a comprehensive overview of the Federal hazmat transportation requirements applicable to automobile and truck dealerships, including those for packaging, marking, labeling and documentation of hazmat typically received, handled, and shipped by dealerships. While it is not intended to fulfill any of the mandatory training requirements, it may be used to supplement hazmat training provided to or for hazmat employees.

A DEALER GUIDE TO

Driven The Federal Hazmat Transportation Regulations

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INTRODUCTION

The Federal hazardous materials (hazmat) transportation law, administered and enforced by the U.S. Department of Transportation (DOT), aims to protect against risks to life and property inherent in transporting hazmat in commerce. DOT has designated certain substances and articles as hazmat based on a determination that transportation of these substances or articles in a particular amount or form poses an unreasonable risk to health, safety, property, or the environment. Moreover, DOT has issued Hazardous Materials Regulations (HMR) for the safe transportation of hazmat.[1]

Applicability

Dealerships that offer or accept hazmat for transportation in commerce, or employ persons who offer or accept hazmat for transportation in commerce, are subject to the Federal hazmat law and the HMR. "Transportation of a hazmat in commerce" includes the:

- Movement of hazmat by rail car, aircraft, motor vehicle, or vessel
- Loading incidental to movement of hazmat
- Unloading incidental to the movement of hazmat; or
- Storage incidental to the movement of hazmat

Hazmat Transportation and Pre-Transportation Functions

In addition to the hazmat transportation functions listed above, the HMR apply to each person who offers hazmat for transportation in commerce, who causes hazmat to be transported in commerce, who transports hazmat in commerce, or who performs any of the following pre-transportation functions:

- Classifying hazmat
- Selecting packaging
- Filling hazmat packaging
- Transloading hazmat for the purposes of continuing the movement
- Securing a closure on a filled or partially filled hazmat package or container
- Marking a package containing hazmat
- Labeling a package containing hazmat
- Preparing a shipping paper
- Providing and maintaining emergency response information
- Reviewing a shipping paper to verify compliance with the requirements
- Providing the shipper with information regarding the HMR
- Certifying that hazmat is in proper condition for transportation

- Loading, blocking, and bracing hazmat in a freight container or vehicle
- Segregating hazmat from incompatible cargo
- Selecting, providing, or affixing placards to a freight container or vehicle

Therefore, dealerships and their employees—including part-time, full-time, temporary, or contract employees—who perform one or more of the packaging, hazmat transportation, or pre-transportation functions described above, are subject to the HMR, as well as the initial and recurrent training required to perform those functions. Typically, hazmat employees include parts and certain service or body employees. It is recommended that hazmat functions be listed in applicable written job descriptions and that a list of hazmat employees be maintained.

Training

Training Requirements

Authority for the development and enforcement of the HMR is vested in the Associate Administrator for Hazardous Materials Safety of the Pipeline and Hazardous Materials Safety Administration (PHMSA), a DOT agency. PHMSA requires all hazmat employees to receive the following training:

- General Awareness/Familiarization Training
- General Safety Training
- Security Awareness Training
- Function-Specific Training
- In-Depth Security Training
- Driver Training

General Awareness/Familiarization Training should provide familiarity with the requirements of the HMR, and enable employees to recognize and identify hazmat consistent with the HMR.

General Safety Training should address: (1) emergency response information; (2) measures to protect employees from hazards associated with hazmat to which they may be exposed in the workplace, including specific measures the hazmat employer has implemented to protect employees from exposure; and (3) methods and procedures for avoiding accidents, such as proper procedures for handling packages containing hazmat.

Security Awareness Training should provide an awareness of security risks associated with hazmat transportation and methods designed to enhance transportation security. It should also include a component covering how to recognize and respond to possible security threats.

Function-Specific Training, required for all hazmat employees, must address: (1) exemptions or special permits issued by PHMSA, if applicable; and (2) all HMR requirements specifically applicable to the function(s) performed by hazmat employees.

In-Depth Security Training is required for hazmat employees whose employer is required to have a written hazmat security plan. This training should address the security plan and its implementation, and include company security objectives, specific security procedures, employee responsibilities, actions to take in the event of a security breach, and the organizational security structure.

Driver Training is required for hazmat employees who operate motor vehicles. The training must address procedures necessary for the safe operation of such motor vehicles, including: (1) pre-trip safety inspections; (2) vehicle controls and

equipment, including emergency equipment; (3) vehicle operation and vehicle characteristics; (4) procedures for maneuvering tunnels, bridges, and railroad crossings; (5) requirements pertaining to attendance of vehicles, parking, smoking, routing, and incident reporting; and (6) loading and unloading of hazmat including compatibility and segregation of mixed loads, package handling, and securement. Additional training may be required for operators of vehicles over 10,000 GVWR.

Training Frequency and Relevancy

Hazmat employees should receive required hazmat training within 90 days of assignment to a job with a hazmat function. Newly assigned hazmat employees may perform hazmat functions under the direct supervision of properly trained hazmat employees. Hazmat employees also must receive recurrent hazmat training at least once every three years. Training should be relevant to the job function performed and be of such duration as to ensure that it is effective.

Training Records

Training records are required for all hazmat employees and must include:

- The name of the hazmat employee
- The most recent training completion date
- The name and address of the person providing the training
- A copy of the materials (e.g., manuals) or the location of the materials
- A certification that the employee has been trained and tested

Training records for the current training period must be available to authorized government agency representatives until at least 90 days after any termination of employment or cessation of the performance of hazmat functions.

Hazmat transportation training is available through many sources. For more information, see PHMSA at http://hazmat.dot.gov/common/thirdpty.htm or call the Office of Hazardous Materials Initiatives and Training at 202.366.4900. ■

REGULATORY REQUIREMENTS

Dealers should understand that the "hazmat transportation regulations" actually consist of multiple, similar-sounding regulations across different federal agencies and even across different countries. ***Each of the following is explained in more detail in the "Regulatory Requirements" appendix.***

The Hazardous Materials Regulations (HMR)

Dealership employees who perform one or more of the packaging, hazmat transportation or pre-transportation functions previously described are subject to the HMR, including applicable training requirements. Dealerships handling hazmat should become familiar with applicable provisions of the HMR.

International Standards

Among international standards are:

- **Canada's Transport of Dangerous Goods Regulations (TDGR)**
  The U.S. and Canada have a reciprocity agreement allowing the use of each other's standards for transport of hazmat between them.
- **Mexico's Normas Oficiales Mexicanas (NOMs)**
  As the U.S. does not have a reciprocity agreement with Mexico, the U.S. requires that all shipments to and from Mexico comply with the HMR.
- **International Civil Aviation Organization (ICAO) Technical Instructions**
  These are the official rules for the transport of hazmat aboard aircraft. Although these rules are closely aligned with the HMR, there are some important differences. Many air carriers require compliance with the International Air Transport Association's Dangerous Goods Regulations, which are generally more restrictive than the ICAO Technical Instructions.
- **International Maritime Dangerous Goods (IMDG) Code**
  These are the official rules for the transport of hazmat aboard passenger and cargo vessels. Many carriers require compliance with international standards as a matter of business practice.

U.S. Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (Hazcom)

The hazcom or "Right-to-Know" standard requires dealerships to classify and identify chemical hazards to which employees might be exposed.

U.S. Environmental Protection Agency (EPA) Hazardous Waste Rules

The EPA administers various rules governing hazardous waste. ■

CLASSIFICATION

Hazmat classification is based, in part, on: (1) accident history; (2) the physical and chemical properties associated with a substance or article; and (3) a harmonized international classification system.

Accident History

Various significant accidents and incidents have helped to shape the current regulatory scheme, including the Texas City Disaster (1947), the Union Carbide Disaster (1984), ValuJet Flight 592 (1986), FedEx Flight 1406 (1986), and UPS Flight 1307 (2006). The ValuJet accident is detailed in the "Accident History" appendix.

Physical and Chemical Properties

Hazmat substances and articles pose a risk to health, safety, property, and/or the environment under normal conditions of transport. They may be:

- Explosive
- Corrosive
- Flammable
- Toxic
- Pressurized
- Elevated in Temperature
- Radioactive
- Reactive
- Oxidizing
- Noxious, Irritating, or Incapacitating
- Harmful to the Environment

These physical and chemical properties are defined and explained in the "Physical and Chemical Properties" appendix.

International Classification System

The U.S. has adopted the international (harmonized) classification system for dangerous goods. There are nine internationally recognized hazard classes, five of which are further divided into divisions or sub-classes. They are:

Class 1: Explosives
Division 1.1 Explosives having a Mass Explosion Potential
Division 1.2 Explosives having a Projection Hazard
Division 1.3 Explosives having a Fire Hazard
Division 1.4 Explosives with No Significant Blast Hazard
Division 1.5 Very Insensitive Explosives
Division 1.6 Extremely Insensitive Explosives

Class 2: Gases
Class 2.1 Flammable Gases
Class 2.2 Non-flammable Gases
Class 2.3 Toxic Gases

Class 3: Flammable Liquids

Class 4: Flammable Solids, Spontaneously Combustible Materials, and Substances that are Dangerous When Wet
Class 4.1 Flammable Solids
Class 4.2 Spontaneously Combustible Materials
Class 4.3 Materials that are Dangerous When Wet

Class 5: Oxidizers and Organic Peroxides
Class 5.1 Oxidizers
Class 5.2 Organic Peroxides

Class 6: Toxic Materials and Infectious Substances
Class 6.1 Toxic Materials
Class 6.2 Infectious Substances

Class 7: Radioactive Materials

Class 8: Corrosive Materials

Class 9: Miscellaneous Dangerous Goods, Substances and Articles ■

AUTOMOTIVE HAZARDOUS MATERIALS

A number of automotive parts, components, and accessories may be classified as hazmat and may be found in any of the following vehicle systems:

- Power Train
- Electrical
- Steering and Suspension
- Fuel
- Passenger Safety
- Paint and Body
- Accessories and Aftermarket Auto Care Products

Power Train

New and used vehicles powered by flammable liquids, flammable gases, or hybrid systems typically are regulated for transportation. While battery-powered vehicles are not subject to the HMR when transported by rail, highway, or vessel, vehicles powered by primary lithium batteries, if transported with batteries installed, are forbidden aboard passenger-carrying aircraft.

Although excepted from the HMR for ground transport, it is required that:

- Tanks and systems containing flammable liquefied or compressed gas fuel are securely closed.
- Batteries are prevented from short-circuiting.
- No other hazmat is carried in or on the vehicle, unless integral to the vehicle (e.g., air bags, batteries, fire extinguishers).

Engines powered by gasoline or other flammable liquids may be regulated for transportation. While many new engines do not contain any fuel when shipped as service parts and thus are not subject to the HMR, new or used engines containing small amounts of flammable liquids or residues (e.g., after testing) may be subject to hazmat transportation requirements. Engines with less than 500 ml (16.9 fluid ounces) of flammable liquid fuel in the tank, engine components, or fuel lines are excepted from the HMR when offered for transport by ground, provided they are secured to prevent fuel leakage during transportation. Additional restrictions, such as documentation and special marking/labeling requirements, may apply for air or ocean transport.

Even if excepted from the HMR for ground transport, engines may contain motor oil or lubricants that can create hazardous conditions (e.g., environmental damage, slip risk) if they leak while in transit. Accordingly, prior to shipping it is best to drain them of oil and other fluids if possible, and pack them in strong plastic bags with absorbent pads to absorb any free liquid.

Transmissions, gear boxes, drive shafts, universal joints, and differentials are not regulated for transportation as hazmat. They may, however, contain gear oil or lubricants which can create a nuisance (e.g., environmental damage, slip risk) if they leak while in transit. Thus, prior to shipping, they also should be drained of oil and other fluids, if possible, and packed in strong plastic bags with absorbent pads to absorb any free liquid. They may be packed in strong outer, non-specification packagings, in protective enclosures (e.g., in fully-enclosed wooden slatted crates or plastic clam shells), or on pallets.

Electrical

Electrical systems may involve a variety of hazmat including primary and auxiliary batteries, speakers, and battery disconnects.

Batteries store electrical energy for motive or auxiliary power for vehicles or their systems. Types of batteries installed in vehicles that may be regulated for transportation include wet acid, alkaline, lithium, nickel metal hydride, sealed non-spillable acid or alkaline, or non-spillable glass-mat or gel batteries. In some cases, dry batteries are shipped with separate electrolyte packs. Lithium batteries are not permitted for transportation by passenger aircraft and may only be shipped on cargo aircraft under special permission from PHMSA. Some carriers may not accept certain batteries for transport under any circumstances. Note, "non-spillable" batteries must pass a vibration and pressure differential test, without failure or leakage, and conform to applicable provisions of 49 CFR §173.159(d).

Speakers and other vehicle parts and components that contain magnetized materials generally are not regulated for transport as hazmat. However, if they are transported by air in significant quantities (e.g., pallet loads), the magnetic field created may affect the aircraft's navigational instruments. In such cases, the unit loads or overpacks must be marked and labeled as magnetized material and appropriately declared for carriage aboard the aircraft.

Battery disconnects are cable cutters that use a small explosive charge to sever a vehicle's battery cables to prevent a source of ignition following an accident. These devices are usually classified and described as Class 1.4 explosives.

Fuel

Vehicles powered by gasoline or other flammable liquids have a number of parts, components, and accessories that come into contact with these liquids including:

- Charcoal canisters
- Fuel pumps, injectors or rails
- Gas tanks, filler necks or gas caps
- Fuel lines, filters, fuel pressure regulators or fuel pressure senders

Although most of these products do not contain fuel when shipped as new manufacturing or service parts, most contain some flammable liquid fuel or residue when offered under a warranty or service parts return program. Accordingly, they must be properly packaged and prepared for transport.

Some fuel pumps, injectors and rails may be shipped as new service parts in a special rust preventative coating that may be classified as a flammable liquid. These coatings may contain trace amounts of gasoline or other flammable liquids used for testing purposes. New or used fuel pumps, filters, pressure regulators, injectors, charcoal canisters, and other parts, components, or accessories that contain small amounts (i.e., less than 500 ml or 16 fluid ounces) of flammable liquid fuel or residues may be transported by ground as DANGEROUS GOODS IN APPARATUS and may be entitled to significant regulatory relief.

Passenger Safety

Many vehicles are equipped with safety restraint components such as:

- Driver-side air bag modules
- Passenger-side air bag modules
- Seat-belt pretensioners
- Side-impact air bag modules
- Knee, head and thorax air bags
- Roll bars
- Pedestrian protection systems

These safety restraint systems use small amounts of explosives as igniters or blasting caps to initiate the safety device. Some may be charged with a compressed gas under extreme pressure.

An air bag inflator (a casing containing an igniter, a booster material, a gas generant and, in some cases, a gas cylinder) is a gas generator used to inflate an air bag in a supplemental restraint system. An air bag module is the air bag inflator with an inflatable bag assembly. A seat-belt pretensioner contains similar hazmat and is used in the seat-belt restraining system of a motor vehicle.

Air bag modules, seat-belt pretensioners, roll bars, and pedestrian protection systems may be classified as explosives of Classes 1.4 or 9, and must be properly marked and labeled, packaged in United Nations'-approved packagings (see below under Packing and Packaging), and declared for all modes of transport. Note that safety restraint systems using explosive initiators or percussion caps are assigned an explosive registration number that must be noted on the hazmat shipping paper for all modes of transport.

Steering and Suspension

Vehicle steering and suspension systems may have hazmat components such as:

- Shock absorbers, struts and other accumulators
- Pressurized brake boosters

Accumulators intended to function as shock absorbers, struts, gas springs, pneumatic springs, or other impact- or energy-absorbing devices are not subject to the HMR, provided each design type complies with 49 CFR § 173.306(f)(4) and:

- Has a gas space capacity ≤ 1.6 L
- Has static charge pressure ≤ 280 bar (~ 4170 psi)
- Has a Design Factor (DF) ≤ 80 where DF = pressure (bar) x volume (L)
- Has a minimum burst pressure of 4 to 5 times the static pressure at 20° C
- Is manufactured under a written quality assurance program
- Is subjected to a fire test where the device does not fragment or rocket

Pressurized brake boosters are pneumatically charged devices in anti-lock braking systems. They use nitrogen or other non-flammable compressed gases to provide additional braking force to "pump" the brakes in order to avoid wheel lock-up while allowing the wheels to continue to turn.

Paint and Body

Automotive hazmat related to vehicle paint and body systems include:

- Lift-gate supports (e.g., hood stays, trunk stays)
- Windshield washer fluids (e.g., concentrate)
- Paint
- Paint-related materials
- Adhesives
- Coating solutions

Lift-gate supports (e.g., trunk or hood stays) are pressurized accumulators described as UN3164, ARTICLES, PRESSURIZED PNEUMATIC, 2.2.

Windshield washer fluid generally is regulated as a flammable liquid if it is a concentrated isopropanol or methanol solution. However, it may be entitled to significant regulatory relief as a CONSUMER COMMODITY or ORM-D (other regulated material) if packaged for retail distribution in receptacles of ≤ 1.0 Liter (33.8 fluid ounces). Moreover, if diluted to less than 24% concentration, it may not be covered by the HMR due to exceptions for aqueous alcohol solutions.[2]

Paint and paint-related materials (e.g., paint thinner, paint gun cleaner) typically are classified as flammable liquids. These flammable, solvent-based chemicals may be CONSUMER COMMODITY or reclassified as ORM-D if packaged in receptacles of ≤ 1.0 L and intended or suitable for retail distribution. Small quantities of touch-up paint and paint-related materials (e.g., striping preparation kits, adhesion promoter pens) may be entitled to significant regulatory relief if the inner receptacles are ≤ 30 ml (1 fluid ounce).

Adhesives often are solvent-based chemicals classified as flammable liquids. Like paint, paint-related materials, and other limited quantities of flammable liquids, adhesives may be entitled to regulatory relief if packaged or distributed for retail sale.

While many coating solutions are not regulated for transportation because they do not meet the hazard class criteria for flammable liquids, some coating solutions contain solvents that cause them to be regulated as hazmat. These may include windshield sealant, vehicle undercoating, and soundproofing sealants.

Accessories and Aftermarket Auto Care Products

Many accessories may be classified as or contain regulated hazmat, including:

- Flares
- Fire extinguishers
- Tire inflators
- Nitrous oxide (nitro) boosters
- First aid kits

Flares typically are flammable solids or explosive devices that deflagrate and generally are regulated as Class 1.4 or 4.1 hazmat.

Fire extinguishers are pressurized cylinders typically charged with nitrogen, carbon dioxide, hydrofluorocarbons (e.g., Halon™ 13B1), or hydrochlorofluorocarbons (e.g., R115) and are regulated as Class 2.2 hazmat.

Tire inflators are often contained in pressurized cylinder or aerosol cans and are charged with a non-flammable compressed gas, although some aerosol tire inflators may be charged with flammable propellants. High-pressure tire inflators typically are charged with carbon dioxide under very high pressure (e.g., 1800 psi). They are classified, marked, labeled, and described per the requirements for the gas contained within the device.

Nitro boosters are high-pressure DOT or Transport Canada (TC) specification cylinders charged with nitrous oxide, a non-flammable and oxidizing compressed gas, which provides additional oxygen to support combustion and increase engine horsepower.

In most cases, first aid kits that contain only antiseptic sprays, alcohol cleansing pads, and antiseptic pads or cleansing wipes in small foil packets may be regulated as Class 4.1 hazmat. They are not subject to the HMR at all if the sealed packets contain less than 10 ml of a Class 3 flammable liquid absorbed onto a solid material, and there is no free liquid in the packet.

Other aftermarket auto care products and chemicals that may be hazmat include:

- Cleaning compounds
- Waxes and polishes
- Wheel bright
- Fuel system additives
- Window etch kits

In most cases, aftermarket auto care products including waxes, polishes, fuel system additives, cleaning compounds, and adhesives may be designated as CONSUMER COMMODITY and reclassified as ORM-D for surface transport when packaged in limited quantities, and in a form suitable for retail distribution. Moreover, some aftermarket auto care products, such as window etch kits, adhesives, or sealants may be entitled to significant regulatory relief if they are packed in inner packagings that do not exceed 30 ml (1 fluid ounce). They may be transported under the small quantity provisions.[3] ■

HAZARD COMMUNICATION

PHMSA requires that the risks associated with hazmat be effectively communicated in a manner consistent with international and other applicable standards. In short, shippers (including dealerships) must use standardized names, identification numbers, labels, and placards to identify substances or articles being offered and the risks associated with those substances or articles.

Package Marks

In most cases, packages of hazmat must be marked with the:

- Proper shipping name, including correct technical or chemical name, as required
- Identification number
- Shipper and/or consignee name and address
- Gross weight, net volume, or net explosive weight, as required

Labeling

Unless excepted from labeling (e.g., ORM-D), packages containing hazmat must be marked with primary and subsidiary risk warning labels corresponding to the hazard class assigned to the substance or article. Hazard warning labels are square-on-point (diamond-shaped) labels that include the hazard symbols, hazard class name, and class or division number in the bottom corner.

Labels must be applied to the same surface as and adjacent to the proper shipping name, identification number, and gross weight, net volume, or net explosive weight.

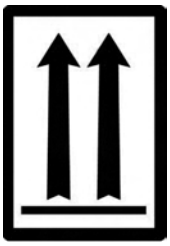
Cargo Handling Labels

Cargo handling labels include the following:

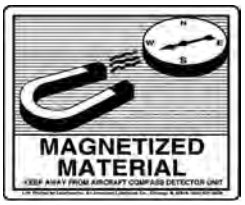
- Orientation arrows
- Cargo aircraft only
- Magnetized material
- Keep away from heat

Hazmat restricted for transport by air to cargo aircraft only (e.g., lithium batteries) must have a "cargo aircraft only" label applied next to and on the same surface as the hazard warning label when it is offered for transport by aircraft.

Packages containing liquids in inner receptacles of combination packagings must have orientation arrows that conform to the ISO pictorial standard on opposite sides of the outer packaging.



Substances classified as magnetized material must be appropriately marked with the proper shipping name and identification number, and must be labeled with a magnetized material label.



Certain hazmat are photosensitive and must be kept away from sunlight or other sources of heat. Packages containing these substances (e.g., organic peroxides) must be labeled with a "Keep Away From Heat" handling label.

Placarding

Certain quantities of hazmat require placards to be applied to the visible exterior surfaces of cargo transport units (e.g., freight containers, tractor trailers). Placards are enlarged square-on-point (diamond-shape) labels that include the hazard symbols, hazard class name, and class or division number in the bottom corner. They are very similar to hazard warning labels except larger.

Placards are not required for shipments of Class 9 hazmat in non-bulk packagings (i.e., ≤ 400 kg gross weight), regardless of the amount shipped.

Generally, vehicles transporting automotive hazmat are not required to be placarded unless the total weight of all non-excepted hazmat being transported exceeds 1000 pounds. This rule is commonly referred to as the "thousand-pound rule."

Limited Quantity Marking

"Limited Quantity" hazmat are smaller amounts for which a packaging exception applies. There are many economic advantages to shipping hazmat under Limited Quantity exceptions. For example, Limited Quantity consignments do not require expensive UN or DOT specification packaging and are excepted from the segregation requirements. In addition, Limited Quantity shipments may not require labels for certain modes of transport and, in some cases, may be excepted from the marking of a proper shipping name.

To determine if a hazmat can be offered as Limited Quantity, the Hazardous Materials Table (HMT) must first be consulted.[4] Column 8A of the HMT will identify the appropriate section within 49 CFR Part 173 that will list the Limited Quantity exceptions for a particular hazmat.

Example: UN1263, Gasoline, 3, II

Column 8A of the HMT refers to 150. This means you should refer to 49 CFR § 173.150 to determine what Limited Quantity exceptions apply. The amount of Limited Quantity hazmat that can be packed in one fiberboard box is dependent upon the hazard class and packing group but may not, under any circumstances, exceed 30 kg (66 lb) per package.

Limited Quantity hazmat must be marked with either the words "Limited Quantity" or the abbreviation "LTD QTY" in association with the other required marks and labels; or with the United Nations identification number in a hollow diamond having dimensions of 100 mm x 100 mm, a black

border at least 2 mm thick, and characters at least 6 mm high. Pictured are two examples:

Consumer Commodity Marking

Limited quantities of hazmat intended for personal care or household use (including automotive applications) packaged in a form suitable for distribution through retail outlets (e.g., dealerships) may be reassigned to "CONSUMER COMMODITY" and reclassified as "other regulated material" (ORM-D).

CONSUMER COMMODITIES are excepted from specification packaging, labeling, and shipping paper requirements. They need only be marked "CONSUMER COMMODITY," with the designation "ORM-D" below in a rectangle. Note that CONSUMER COMMODITY is not a recognized proper shipping name for transport by vessel under the IMDG Code, and that CONSUMER COMMODITY is assigned to Class 9 and the identification number ID8000 for air transport, pursuant to ICAO Technical Instructions. ■

PACKING AND PACKAGING

Hazmat must be packed into strong, approved packagings capable of withstanding forces typically encountered in transportation including:

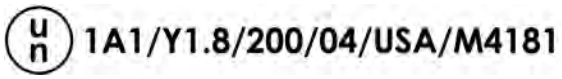
- Vibration
- Friction
- Roll, pitch, yaw
- Sway, heave, surge
- Hogging, sagging, torsion
- Acceleration, retardation
- Extreme temperature (e.g., -40°F to 140°F)
- Tension, compression
- Pressure
- Radiation

UN Specification Packaging

Packages intended to carry hazmat are specially designed, tested and certified as being capable of withstanding forces typically encountered in transport. Unless otherwise excepted, packages containing hazmat (dangerous goods) must be certified to the United Nations' Performance Oriented Packaging (UN POP) standards. UN POP are subjected to a series of tests including:

- Drop
- Dragging
- Hydrostatic pressure
- Jerking
- Stacking
- Pressure differential
- Heating and cooling
- Vibration

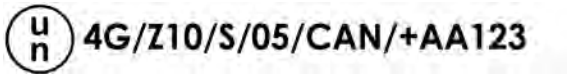
A typical UN POP mark for a package carrying liquids is shown:



UN POP markings applied to packages containing liquids include:

- Packaging type
- Performance level
- Relative density (max)
- Hydrostatic test pressure (max)
- Year of manufacture
- Country of manufacture
- Manufacturer (registered code)

A typical UN POP mark for a package carrying solids or liquids in inner packagings is shown:



These codes apply to packages containing solids or liquids in inner packagings:

- Packaging type
- Performance level
- Gross mass (max)
- "S" for solids or liquids in inner packagings
- Year of manufacture
- Country of manufacture
- Manufacturer (registered code)

Non-Specification Packaging

Certain hazmat and hazmat in limited or excepted quantities may not require the use of UN or DOT specification packagings provided they are capable of passing the prescribed tests for packing group III packagings (e.g., drop test, stacking test). Non-specification packagings must be strong, durable, compatible with the materials within, and capable of withstanding forces typically encountered in transportation such as vibration, temperature extremes, and superimposed weight.

Non-specification fiberboard packagings often are marked with a box maker's certificate or seal, a notation indicating that the packaging conforms to Item 222 of the National Motor Freight Classification (NMFC) rules.

The NMFC system and its corresponding rules constitute a freight industry standard most common carriers comply with. In addition to marks and warning labels required to communicate risks associated with hazmat, packages also may be marked with international symbols including:

- Arrows to indicate the upright position
- A glass to signify "handle with care"
- An umbrella to signify "keep dry"

Cylinders

Certain types of packagings are not recognized by the United Nations. These generally include cylinders for gases and packagings for infectious substances and radioactive materials. Packages carrying these types of hazmat must meet U.S. DOT requirements for transport into, from, or within the U.S. The U.S. currently has a reciprocity agreement with Canada allowing the use of gas cylinders manufactured according to Canadian standards.

Cylinders generally will be marked as follows:

- DOT – Department of Transportation
- TC – Transport Canada
- Cylinder Type (e.g., 3AL)
- NRC – Non-Refillable Container
- Max Allowable Working Pressure (e.g., 2105 psi)
- Serial Number (e.g., F123456)
- Manufacturer (e.g., Luxfer)
- Month (MM) & Year (YY)
- Testing Agency Stamp (e.g., A)

Damaged Packaging

Hazmat packages may not be offered or reoffered into transportation if damaged. Unfortunately, the HMR does not provide clear guidance on how to determine if packages are damaged beyond what one might consider normal "wear and tear."

The intent of the HMR is to ensure that packagings are capable of preventing hazmat from being released while in transportation and are not damaged to the degree that their structural integrity is compromised. Accordingly, dealership personnel should carefully evaluate hazmat packages upon receipt and again if offering the hazmat into transportation. Serious or significant damage (e.g., incisions, wetted, crushed) will warrant repacking the hazmat appropriately.

Fiberboard and other packagings used with hazmat service parts and accessories, such as air bag modules and batteries, generally are "non-reusable containers" (NRC) or single-use packagings that may not be reused after they have been opened. When opened, the packaging's structural integrity may be compromised (e.g., box ripped), in which case it should not be reused if the hazmat is offered for shipment. Therefore, do not open hazmat containing fiberboard boxes or other hazmat packagings until the part is actually to be used or shipped.

Replacement packagings typically are available from hazmat distributors or manufacturers, and from hazmat packaging vendors. When selecting replacement packagings, pay careful attention to the allowable gross weight (mass) restrictions, performance levels, or other parameters indicated on them. ■

DOCUMENTATION

Shipping Papers

Shipping papers contain valuable information regarding the contents of a consignment. Under most circumstances, a shipping paper is required by 49 CFR Part 172, Subpart C to be prepared and tendered with the shipment and maintained away from the hazmat. The information required in the shipping paper must be legible and in English (for shipments to or from U.S. territories and possessions), although other languages may be used. Shipping papers must contain the following information in the prescribed order:[5]

- Shipper and consignee name and address
- Quantity, types and kinds of packages
- Shipping name
- Hazard class and division
- Identification number
- Packing group, if applicable
- Mass and volume
- Additional descriptive information
- Telephone number
- Emergency response information
- Shipper's certification
- Container packing certificate, if required
- Signature

Basic Description

The basic description is the core description for hazmat shipments and is obtained from HMT Columns 2, 3, 4 and 5. An easy way to remember the basic description is to remember the acronym S-H-I-P, which represents the following:

- Shipping name
- Hazard class and division
- Identification number
- Packing group, if applicable

Although S-H-I-P is an easy way to remember what to include, generally the order of the description is I-S-H-P, where the identification number precedes the shipping name, hazard class or division, and packing group. The I-S-H-P sequence currently is required for air and ocean shipments, but is optional for ground shipments. In the interest of harmonization, it is recommended that the I-S-H-P sequence be used for all modes of transport.

Additional Descriptive Information

Additional descriptive information may be necessary to properly communicate hazards associated with some shipments. Shipping papers for automotive hazmat may require one or more of the following kinds of additional descriptive information:

- DOT special permits, approvals, or explosive registration numbers
- Quantity, types and kinds of packages
- Technical or chemical names
- Placards required for transport
- Flashpoint (°C and °F)

Emergency Response Telephone Number

Hazmat offered for transport must be accompanied by a 24-hour emergency response telephone number. The number, which must include correct international and national dialing access codes, must reach a person who:

- Has information regarding proper emergency response procedures; or
- Has immediate access to a person who possesses that knowledge; and
- Is available 24 hours/day during transportation, including storage incidental to the transportation (e.g., demurrage).

While emergency response telephone numbers must be accessible at all times, the following are specifically prohibited:

- Cellular or mobile phones
- Pagers and two-way communication devices (e.g., Blackberry™)
- Answering machines or services
- Facsimile machines

Companies offering emergency hazmat response service at this writing include:

- ChemTrec
- ChemTel
- InfoTrac
- 3E Company

Emergency Response Information

In addition to an emergency response telephone number, emergency response information must be provided to address the following:

- Hazards to health
- Risks of fire or explosion
- Immediate precautions to be taken in the event of an accident or incident
- Immediate methods for handling fires
- Initial methods for handling spills or leaks in the absence of fire
- Preliminary first aid measures

This information must be:

- Printed legibly in English;
- Available for use away from the package; and
- Presented either
  - Written on a shipping paper; or
  - Attached as a separate document (e.g., MSDS); or
  - Cross-referenced to a separate but available document

Recordkeeping Requirements

Maintain copies of hazmat shipping papers at the dealership's principal place of business for at least two years. During inspections, hazmat enforcement agents often request and review copies of shipping papers. It is best to segregate hazmat shipping papers from non-hazardous shipping documents (e.g., invoices, shipping orders, packing lists) and to store them in chronological order for quick access. ■

HAZMAT STORAGE AND TRANSPORTATION

Segregation

Generally incompatible hazmat should not be stored next to or in contact with each other, or in a position which could allow interaction in the event of a leak or release. Hazmat shipments for which segregation is required should not be stowed in the same cargo transport unit. When determining if segregation is required, take into account both the primary hazard class and subsidiary risks to ensure that hazmat will not react with one another while in transit.

Load Securement

The HMR require hazmat to be tightly packed in appropriate packagings. Completed packages must be secured within vehicles or freight containers to prevent movement in any direction. Therefore, dealership personnel loading hazmat into vehicles or trailers should receive function-specific training on the appropriate methods to secure cargo, including any special equipment (e.g., load bars, Ty-Gard) used to secure freight. Dealerships that load or transport hazmat in vehicles should use appropriate dunnaging material to fill voids and loose spaces within the cargo compartment of the vehicle or trailer.

Driver Requirements

Dealership parts drivers who transport hazmat must receive hazmat training and driver training. When transporting hazmat, drivers must inspect vehicles prior to operation to ensure all basic safety components (e.g., brakes, lights, turn signals) are in good working order. In some cases, daily vehicle pre-trip inspections should be documented and maintained on file. When transporting hazmat, drivers must carry required emergency equipment and references, including a fire extinguisher, emergency triangles, and an emergency response guidebook. Chemical spill response kits and first aid kits are also suggested.

Hazmat vehicle drivers must demonstrate driving proficiency including turning, backing, braking, parking, handling, and vehicle control. They also must understand the effects of excessive speed, variable weather and road conditions, and restrictions on the use of drugs, alcohol, and tobacco. It is suggested that dealerships avoid transporting hazmat in their own vehicles or, if they do so, that they use only mature drivers with good driving records.

Vehicles and trailers should be kept free of nails and protrusions that might damage hazmat packages. Any hazmat must be tightly secured within vehicles and, if possible, loaded to facilitate inspection or removal in case of fire. Never load hazmat into a vehicle's passenger compartment (e.g., driver's cab). Parking brakes must be engaged and smoking should not be permitted during the loading or unloading of hazmat into or from a vehicle.

In the event of an accident, drivers should keep persons away and warn them of potential dangers. In the event of a fire or leak, drivers should avoid contacting or inhaling the hazmat and should remain upwind of the vehicle. Dealership and emergency response personnel should be contacted immediately.

Dealer Return Programs

In general, unopened and undamaged packages of automotive hazmat may be returned to manufacturer parts distribution centers, but some manufacturers may not allow the return of consumable items such as touch-up paint, chemicals, or aerosols. Authorized returns should be shipped in the same manner as new parts. Special care should be taken to ensure that packages are in good, resalable condition and that the required marks and labels are properly affixed. A hazmat shipping paper must be provided with the requisite information.

There are a number of sources for "dealer return kits" that include pre-marked, pre-labeled packagings with pre-printed shipping papers and, in some cases, pre-paid return authorization shipping labels. Contact the appropriate parts distribution center with any questions in this regard.

Warranty Returns

Many warranty parts return programs require that certain hazmat parts or components be shipped to a warranty or service claim location. Note that even if the original or replacement part was not classified as hazmat, the used part or component may be. This is particularly true of engines and fuel system components (e.g., fuel pumps, fuel pressure senders, fuel lines, gas tanks, etc.). Any hazmat return must be appropriately packaged, marked, labeled, and declared for transportation from a dealership to a warranty or service claim center.

There are a number of sources for "warranty return kits" that include pre-marked, pre-labeled packagings with pre-printed shipping papers and, in some cases, pre-paid return authorization shipping labels. Contact the appropriate warranty or service claim facility with any questions in this regard.

Will-Call Pickups

Hazmat often is picked up by a commercial customer (e.g., auto body shop). Because such hazmat will move in commerce on a public right-of-way, HMR requirements apply to both the offering party (e.g., dealership) and accepting party (e.g., customer). Accordingly, the hazmat should be properly marked, labeled, and packaged, and should be accompanied by a proper shipping paper, even when the transaction is "over-the-counter." Dealerships may wish to consider prohibiting will-call hazmat pickups for materials requiring shipping papers and emergency response information (e.g, air bag modules, batteries). ■

SUMMARY

The Federal hazmat law and HMR can be complex. To the extent that dealerships can avoid offering shipment or transport of hazmat, they can avoid these requirements. However, most dealerships load, unload, and handle hazmat, and thus must ensure that their hazmat employees receive proper training. No doubt, dealerships should consider the potential of significant enforcement, fines, and penalties when implementing compliance. Consider too the importance of avoiding potentially harmful accidents and injuries, preserving the health and safety of employees and the public, and protecting the environment.

For additional information on these requirements, please contact the DOT Hazardous Materials Hotline at 800.467.4922. ■

Appendices

REGULATORY REQUIREMENTS

The Hazardous Materials Regulations (HMR)

No person may offer or accept hazmat for transportation in commerce unless it is properly classified, described, packaged, marked, labeled, and in condition for shipment, as required or authorized by applicable requirements of the HMR or, pursuant to an exemption or special permit, approval, or registration. It is the dealership's ultimate responsibility to see that hazmat employees comply with all applicable provisions of the HMR.

The Code of Federal Regulations (CFR) contains the general and permanent rules published by the executive departments and agencies of the Federal government. The HMR are found in 49 CFR Subchapters A and C, which include parts 107 and 171-178. Key provisions of 49 CFR Subchapter C include:

Part 107 Special Permits and Approvals
Part 110 Registration
Part 171 General Requirements, Use of International Standards, Definitions
Part 172 Hazard Communication, Training, Security Plans
Part 173 Hazard Classification, Packaging Authorizations and Exceptions, General Transport Requirements
Part 174 Specific Requirements for Hazmat Transportation by Rail
Part 175 Specific Requirements for Hazmat Transportation by Aircraft
Part 176 Specific Requirements for Hazmat Transportation by Vessel
Part 177 Specific Requirements for Hazmat Transportation by Highway
Part 178 Packaging Marking, Manufacturing, Reconditioning and Testing

Dealerships handling hazmat should become familiar with the applicable HMR provisions.

International Standards

Dealerships that offer or transport hazmat to Hawaii, Alaska, Canada, Mexico, Puerto Rico, the U.S. Virgin Islands, and other destinations, or that offer or transport hazmat aboard aircraft or seagoing vessels (including ferries) also may be subject to certain international standards. These are briefly described below.

Canada's Transport of Dangerous Goods Regulations (TDGR)

The U.S. and Canada have a reciprocity agreement allowing the use of each other's standards for transport of hazmat between them. For example, shipments originating in the U.S. and terminating in Canada may be prepared in accordance with the HMR. Conversely, shipments originating in Canada and terminating in the U.S. may be prepared in accordance with the standards outlined in Canada's TDGR. However, hazmat shipments originating and terminating in the U.S. must comply with the

HMR, while shipments originating and terminating within Canada must comply with the TDGR.

Mexico's Normas Oficiales Mexicanas (NOMs)

Unlike Canada, the U.S. currently does not have a reciprocity agreement with Mexico recognizing each other's hazmat standards. Although their hazmat rules are very similar, the U.S. requires that all shipments to and from Mexico comply with the HMR. Conversely, Mexico requires that all hazmat shipments to and from Mexico comply with the NOMs, which includes a requirement that shipping papers be made available on a special form and in the Spanish language. Both the U.S. and Mexico allow hazmat packages and dangerous goods declarations (shipping papers) to be dual-marked and in both English and Spanish.

International Civil Aviation Organization (ICAO) Technical Instructions

The ICAO Technical Instructions for the Transport of Dangerous Goods by Air are the official rules recognized internationally for the transport of hazmat (or dangerous goods) aboard passenger and cargo aircraft. Although the ICAO Technical Instructions are very closely aligned with the HMR, there are a number of significant differences including, but not limited to, commodity-specific requirements and restrictions; shipping paper emergency response information and telephone numbers; and the classification of explosive substances and inclusion of explosive registration numbers for air bag modules and seat-belt pretensioners on shipping papers.

Many air carriers require compliance with the International Air Transport Association's Dangerous Goods Regulations. This document is closely aligned with, but generally more restrictive than, the ICAO Technical Instructions.

International Maritime Dangerous Goods (IMDG) Code

The IMDG Code consists of the official rules recognized internationally for the transport of hazmat (or dangerous goods) aboard passenger and cargo vessels. Like the ICAO Technical Instructions, the IMDG Code is very closely aligned with the HMR. Significant differences include commodity-specific requirements and restrictions; shipping paper emergency response information and telephone numbers; the preparation of engines and vehicles in intermodal freight containers; and the classification of explosive substances and inclusion on shipping papers of explosive registration numbers for air bag modules and seat-belt pretensioners.

Many carriers require compliance with international standards as a matter of business practice. For example, many steamship lines require the use of the IMDG Code for the transport of hazmat within the U.S. (e.g., California-Hawaii).

Additional Requirements

Some carriers (e.g., UPS) have additional requirements that must be adhered to, beyond what is required by the HMR or international standards. Before offering hazmat for transportation, identify any carrier-specific requirements that must be complied with as a condition of acceptance and carriage.

U.S. Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (Hazcom)

Set out in 29 CFR §1910.1200, the hazcom or "Right-to-Know" standard requires dealerships to classify and identify those hazards associated with chemical substances (including hazmat and wastes) in the workplace, for which there is a reasonable expectation of employee exposure. The standard requires chemical marking and labeling,

the collection and availability of Material Safety Data Sheets (MSDSs), and employee training. For detailed information on OSHA's hazcom standard, see NADA Management Guide L22, *A Dealer Guide to the OSHA Hazard Communications Standard*.

There is overlap between the HMR and OSHA's hazcom standard. For example, PHMSA allows the use of "Right-to-Know" training to satisfy the hazmat General Safety training requirements, provided DOT hazard warnings, markings, labels, placards, and shipping papers are addressed; an examination is offered; and training records are maintained. Dealerships may elect to incorporate hazmat General Safety training into their hazcom training program. Those that do must use an exam and training certification and maintain the records as required by the HMR (49 CFR §172.704). In addition to the initial training required by both rules, hazmat employees must be retrained at least every three years.

The MSDSs required by the hazcom standard may be used to fulfill the HMR requirement for emergency response information, provided they are properly written and attached to the hazmat shipping papers as separate, but available, documents.[6] MSDSs are required with the first shipment to a commercial account.

U.S. Environmental Protection Agency (EPA) Hazardous Waste Rules

EPA administers rules governing the management, treatment, and disposal of hazardous waste.[7] Again, there is overlap with DOT's hazmat rules. For waste shipments, the proper shipping name, identification number, hazard class, division, compatibility group, and packing group, if applicable, must be clearly noted on the hazardous packaging adjacent to the required DOT hazard warning labels. Hazardous waste manifests also must conform to DOT shipping paper requirements, including the required basic description, additional descriptive information, emergency response information and telephone number, quantity, types and kinds of packaging, and shipper's certification.[8] Universal waste shipments are also regulated by DOT (e.g., wet acid batteries, lithium batteries) and must be packaged, marked, labeled and documented accordingly. ■

ACCIDENT HISTORY

Accident history plays a role in the development of rules applicable to the transport of hazmat. A number of significant accidents and incidents have helped to shape the current regulatory scheme, including the Texas City Disaster (1947), the Union Carbide Disaster (1984), ValuJet Flight 592 (1986), FedEx Flight 1406 (1986), and UPS Flight 1307 (2006).

One of the most significant accidents in recent history was the crash of ValuJet Flight 592. A contract maintenance facility operator for ValuJet airlines put 144 oxygen generators aboard the flight packed in five fiberboard boxes without any marks, labels, or documents describing them as hazmat. Because they were poorly packed, and did not have safety caps installed, one or more of the devices accidentally triggered during handling and loading. The resulting fire was not detected until there was a major conflagration below deck, with temperatures reaching in excess of 1100° F. Cables controlling the flaps and rudder were damaged causing the plane to lose maneuverability and crash into the Florida Everglades, just a few miles from the runway, killing all 110 persons on board. ■

PHYSICAL AND CHEMICAL PROPERTIES

Hazmat substances and articles may be:

- Explosive
- Corrosive
- Flammable
- Toxic
- Pressurized
- Elevated in Temperature
- Radioactive
- Reactive
- Oxidizing
- Noxious, Irritating, or Incapacitating
- Harmful to the Environment

Explosive materials either detonate or deflagrate. They include substances and articles that detonate, releasing tremendous pressures. Devices and articles that deflagrate burn very rapidly—much faster than flammable solids. Air bag modules, seatbelt pretensioners, pyrofuses, rollover protection devices, and battery disconnects are all examples of explosive substances. If tested in accordance with certain international classification protocols, these devices may be reassigned to a different hazard class or division.

Corrosive materials can cause necrosis of the skin (death of living tissue) at the site of contact following exposure of up to four hours. They may also corrode steel or aluminum. Corrosive materials include wet acid or wet alkali batteries, many cleaning compounds, and mercury.

Flammable materials include gases, solids, and liquids that burn rapidly provided a source of oxygen and ignition is available. Flammable materials include many aerosol propellants, gasoline, fuels, paint, paint thinner and reducing compounds, adhesives, coating solutions, and flammable liquids absorbed onto solids.

Toxic materials cause sickness, disease, or death to humans or animals through exposure by absorption, inhalation, or ingestion. Examples include toxins produced by plants, animals, and infectious substances, and pesticides, herbicides, chlorinated cleaning products, heavy metals, and bloodborne pathogens.

A pressurized material can release energy very quickly if its containment vessel is damaged or ruptured. Pressurized materials also may be corrosive, toxic, flammable, reactive, or extremely cold (cryogenic). Examples include weld shielding and cutting gases, aerosols, fire extinguishers, air curtains, shocks, struts, stays, and brake boosters.

Elevated temperature materials include molten materials and substances heated and transported at or above their flashpoint. Examples include molten sulfur, aluminum, and bituminous asphalt.

Radioactive materials undergo rapid electrical transformations resulting in the spontaneous release of radioactive particles. Examples include certain smoke detectors, exit signs, x-ray and radiography (weld testing) equipment.

Reactive materials are chemically or thermally unstable materials that react with oxygen, water, other chemicals, or light to produce heat or light or toxic, flammable, or corrosive gases or by–products. Common examples include epoxy resins and hardeners, sodium, magnesium, and strong acids and alkalis.

Oxidizing materials can react with other substances to generate heat and oxygen or other oxidizing substances that may contribute to, or cause, a fire. Examples include oxygen, some fertilizers, strong acids and alkalis, and cream hardeners.

Noxious, irritating, or incapacitating agents such as methacrylates, quick-set glues, mace, pepper spray, or tear gas may cause persons exposed to them, even in small concentrations, to become ill or incapacitated. These agents also include substances that have an offensive odor such as mercaptans used to odorize propane or natural gas.

Substances harmful to the environment or aquatic ecosystem also are regulated for transportation. They include substances that may not fall within any of the internationally recognized hazard classes, but which have a negative effect on soils, plants, animals or the aquatic environment. Common examples include marine pollutants and soluble metals and their salts. ■

ENDNOTES

[1] 49 CFR Parts 107, 171-180
[2] 49 CFR §173.150(e)
[3] 49 CFR § 173.4
[4] 49 CFR 172.101
[5] 49 CFR §172.202
[6] 49 CFR §§172.602 and 604
[7] 40 CFR Part 260-265
[8] 49 CFR §172.205

NOTES

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