

**DEPARTMENT OF TRANSPORTATION****Research and Special Programs Administration**

49 CFR Parts 171, 172, 173, 174, 177 and 179

[Docket No. HM-181F, Notice No. 93-16]

RIN 2137-AC40

**Performance-Oriented Packaging Standards; Miscellaneous Amendments**

**AGENCY:** Research and Special Programs Administration (RSPA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** RSPA is proposing changes to certain provisions of the Hazardous Materials Regulations (HMR). The proposed changes are based on petitions for rulemaking and RSPA initiative. The intended effect of this action is to update the regulations, relax certain regulatory requirements, and reduce unnecessary economic burdens on industry without an adverse effect on safety.

**DATES:** Comments must be received by August 11, 1993.

**ADDRESSES:** Comments to this NPRM should be addressed to the Dockets Unit (DHM-30), Research and Special Programs Administration, U.S. Department of Transportation, Washington, DC 20590-0001. Comments should identify the Docket (HM-181F) and be submitted in five copies. Persons wishing to receive confirmation of receipt of their comments should include a self-addressed stamped postcard showing the docket number. The Dockets Unit is located in Room 8421 of the Nassif Building, 400 Seventh Street, SW., Washington, DC 20590-0001. Telephone: (202) 366-5046. Public dockets may be reviewed between the hours of 8:30 a.m. and 5 p.m., Monday through Friday except Federal holidays. **FOR FURTHER INFORMATION CONTACT:** Beth Romo or John Gale, telephone (202) 366-4488, Office of Hazardous Materials Standards, or Charles Hochman, Office of Hazardous Materials Technology (202) 366-4545, Research and Special Programs Administration, U.S. Department of Transportation, 400 Seventh Street, SW., Washington, DC 20590-0001.

**SUPPLEMENTARY INFORMATION:**

**I. Background**

On December 21, 1990, the Research and Special Programs Administration (RSPA) published a final rule [Docket

HM-181; 55 FR 52402], which comprehensively revised the HMR with respect to hazard communication, classification, and packaging requirements based on the United Nations (UN) Recommendations on the Transport of Dangerous Goods. A document responding to petitions for reconsideration and containing editorial and substantive revisions to the final rule was published on December 20, 1991 [56 FR 66124]. On October 1, 1992, under Dockets HM-181 and HM-189, RSPA issued editorial and technical corrections to the 1991 49 CFR parts 107-180. RSPA has received several petitions for rulemaking since the publication of the December 20, 1991 response to petitions for reconsideration. In addition, RSPA has identified other issues that merit public comment. This document proposes changes to the HMR based on either petitions for rulemaking or agency initiative. These proposed changes pertain primarily to requirements with a mandatory compliance date of October 1, 1993, as provided in the transitional provisions in § 171.14(b)(4). It is RSPA's goal to issue a final rule under Docket HM-181F prior to October 1, 1993; therefore, the comment period is limited to 30 days.

**II. Summary of Petitions for Rulemaking**

This summary addresses only those petitions which merit more extensive discussion because of their significance or general applicability. RSPA also has received other petitions, telephone calls, and letters requesting clarification of new requirements or minor revisions to the regulations. A discussion of these issues, and other proposed changes, is contained in the section-by-section review.

**A. Petitions Requesting Revisions to Bulk Packaging Requirements for Poisonous by Inhalation Materials**

The requirement to insulate bulk packagings for materials poisonous by inhalation which are also corrosive was the major concern of petitioners. Additionally, the petitions requested changes in various special provisions and a delay of the October 1, 1993 implementation date.

**1. Revise Special Provisions B14 and T38 for Bulk Packagings Containing Materials That are Poisonous by Inhalation**

Under the transitional provisions of § 171.14(b)(4), new packaging standards for materials which are poisonous by inhalation (referred to herein as PIH materials) must be met by October 1,

1993. This includes conformance to Special Provisions B14 and T38, which are assigned in Column 7 of the § 172.101 Hazardous Materials Table and contained in § 172.102. Special Provision B14 applies to all bulk packagings, except intermodal portable tanks; Special Provision T38 only applies to intermodal portable tanks. These special provisions read as follows:

**B14—**Each tank, except a multi-unit tank car tank, must be insulated with at least 100 mm (3.9 inches) of cork or other suitable insulation material of sufficient thickness that the overall thermal conductance at 15.5 °C (60 °F) is not more than 1.533 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour per square foot per degree Fahrenheit) temperature differential. Insulation systems must not promote corrosion to steel when wet. Tank and jacket protective coatings are required. Additionally, all tank car tanks constructed after October 1, 1988 and tanks repaired after October 1, 1993, where the entire jacket is removed during repair, must have tank and jacket protective coatings. The jacket must be flashed around all openings so as to be weather tight.

**T38—**Each tank, except a multi-unit tank car tank, must be insulated with at least 100 mm (3.9 inches) of cork or other suitable insulation material of sufficient thickness that the overall thermal conductance at 15.5 °C (60 °F) is not more than 1.533 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour per square foot per degree Fahrenheit) temperature differential. The exterior surface of a carbon steel tank and the interior surface of a carbon steel jacket must be given a protective coating. The jacket must be flashed around all openings so as to be weather tight.

It is important to note that the insulation system on bulk packagings for materials poisonous by inhalation serves two purposes. The first purpose is to offer accident damage protection (impact resistance), and the second is to provide the packaging with thermal protection in the event of a fire situation.

RSPA received one petition for rulemaking (P-1144) requesting an alternative to insulation requirements on bulk packagings containing materials that are both corrosive and poisonous by inhalation. This petitioner suggested that a proportional increase in container shell and head thicknesses would compensate for the puncture resistance provided by the insulation and protective jacket.

The petitioner maintained that the § 172.101 Hazardous Material Table lists 49 combination corrosive/poisonous by inhalation materials, and noted a potential problem with undetected corrosion under an insulation blanket when transporting these combination

materials. Certain of these materials, such as chlorosulfonic acid or dimethyl sulfate, exhibit higher corrosivity when diluted with water. If such a material gets under the insulation, it can form a highly corrosive weak sulfuric acid if the integrity of the jacket flashing around the nozzles is breached by mechanical or chemical attack. The petitioner also described the difficulty in detecting a failure of the weather-tightness of flashing. This petitioner claimed that a 50% increase in tank shell and head thickness, especially with stainless steel, provides equal or greater product containment than current insulation requirements. A series of puncture tests conducted on bare and insulated ISO tank heads by the Association of American Railroads Transportation Test Center were provided as substantiating evidence. These tests concluded that a 3/8" thick stainless steel head was more resistant to puncture than the combination of a 1/4" thick stainless steel head covered with 4 1/4" fiber glass insulation (in accordance with Special Provision B14) and a 20 gage aluminum jacket. As a result, the petitioner requested that two new special provisions, a B note and a T note, be assigned to these combination materials, allowing non-insulated bulk containers if the container shell and head thickness are increased a proportionate amount to compensate for puncture resistance provided by the insulation and protective jacket.

Another petitioner, the Compressed Gas Association (CGA) (P-1155), focused on insulation requirements for cargo tanks containing sulfur dioxide. This petitioner asked that: (1) Special Provision B14 be removed for bulk shipments of liquefied sulfur dioxide; (2) existing liquefied sulfur dioxide cargo tanks be grandfathered; or (3) RSPA delay implementation of the B14 insulation requirements for at least two years to provide adequate time to convert or replace existing cargo tanks. Alternatively, CGA asked RSPA to clarify if it is possible to leave an opening in the insulation for valves and fittings to provide clearance where there is insufficient clearance for flange bolts and valve handle movement.

The CGA claimed that currently all sulfur dioxide cargo tanks are built to MC 330 or MC 331 specifications, but are not insulated and are not designed for insulation. It asserted that, to comply with B14 requirements, nozzles, piping, valving and guards must be retrofitted or removed and replaced to accommodate four inches of insulation and weather-tight jacket flashing.

The petitioner cited the significant expense and insufficient time to retrofit

all tanks by October 1, 1993, as justification for adoption of its recommendations. The CGA claimed that insulation will add about 2500 lbs to the tank, thus causing a 5% increase in the number of shipments and a proportionate increase in risk. It also alleged that insulation prevents external inspection of a tank, thus requiring more frequent internal inspections and resulting in higher operating costs and risk of release. The CGA was not aware of any puncture-related accidents in transporting sulfur dioxide.

RSPA has funded an on-going multi-year research effort at Sandia National Laboratory to study bulk packagings used to transport PIH materials. This effort is a systematic approach to development of specific accident survival performance criteria for PIH materials transported in bulk quantities. Except for radioactive materials, there are currently no standardized accident performance requirements for packages containing bulk quantities of hazardous materials in transport. Nor are there any requirements on the permitted leakage of package contents if an accident occurs.

The criteria developed in this effort will be supported by assessment and analyses of the existing regulatory structure, accident environments and survivability, release scenarios and release consequences. The final result will be accident survivability performance criteria, performance tests, pass/fail criteria, and specific acceptable designs for packaging of bulk quantities of PIH materials. It is anticipated that the contractor will finish work and submit a draft final report on this project to RSPA within six months.

Although RSPA believes that these petitions deserve further consideration, it would be premature to propose any major regulatory changes to the bulk packaging requirements until the final report on this research project is completed. In the interim, RSPA proposes to amend Special Provision B14 to delay compliance with this provision until October 1, 1994, for bulk packagings containing PIH materials which, when in contact with moisture, become highly corrosive and could cause corrosion under an insulation blanket.

## 2. Revise the Insulation Requirements in Special Provisions B14 To Exclude Tank Cars

The HMR requires shippers of PIH liquids to use packagings authorized in § 173.244. In addition, nearly all of these materials are assigned Special Provision B14, as well as either Special Provision B72 (for Hazard Zone A liquid

materials) or Special Provision B74 (for Hazard Zone B liquid materials). As a result, only two tank specifications (i.e., DOT 105J300W and 105J300ALW tank cars) are authorized for these PIH liquids.

For example, sulfuric acid, fuming, greater than 30 percent free sulfur trioxide is assigned § 173.244 for bulk packaging authorizations. This section lists all DOT Class pressure tank cars (i.e., DOT 105, 109, 112, and 114 tank cars). The entry for sulfuric acid, fuming also is assigned Special Provisions B9 (no bottom outlets), B14 (requiring insulation), and B74 (thermally protected DOT 105J, 112J, 112T, 114J and 114T pressure tank cars with tank test pressures ≥300 psi.) as additional requirements. Class DOT 112 and 114 tank cars do not conform to Special Provision B14 because, prior to Docket HM-181, they were defined as non-insulated pressure tank cars. Class DOT 105 tank cars are defined as insulated pressure tank cars which conform to Special Provision B14. Therefore, based on the bulk packaging authorization and the special provisions, the only existing tank cars authorized for sulfuric acid, fuming are DOT 105J300W and 105J300ALW.

Based on recent requests for exceptions from the regulations (including requests for special approval) and FRA research, RSPA and FRA believe there is no need for a PIH packaging to have both a thermal protection system and an insulation system. As mentioned earlier, the purpose of applying an insulation system on tank cars was to offer accident damage protection and thermal protection in an accident or fire situation. Accident damage protection is provided by the use of an 11 gauge metal jacket and head shields on DOT 105S tank cars and DOT 112J and 114J tank cars. The metal jacket and head shields on these tank cars blunt the impacting forces from couplers, wheels, track, and infrastructures along the carrier's right-of-way that may result from an accident. Also, according to FRA research, this blunting effect is directly proportional to the thickness of the tank jacket or head shield and is effective in preventing tank punctures. Increasing the jacket thickness, or the tank head thickness, does increase the puncture resistance of the tank, but increasing the jacket thickness produces the larger effect for the same amount of added steel (see Coltman, M. & Hazel, M., Jr. (1992), Chlorine Tank Car Puncture Resistance Evaluation (DOT/FRA/ORD-92-11) Washington, DC: Federal Railroad Administration (NTIS DOT/FRA/ORD-92-11)). Fire protection

for these materials is provided by a jacketed insulation system, such as required for cargo tanks, portable tanks

and DOT 105 tank cars and, to a greater extent, by a thermal protection system, such as required on DOT 105J, 112J and

114J tank cars. Below is a summary of the accident performance safeguards of DOT specification tank cars.

SUMMARY OF TANK CAR ACCIDENT PERFORMANCE SAFEGUARDS

Class	Head shields	Insulation	Thermal protection	Tank jacket	Large capacity relief valve
112/114 A					
112/114 S	x				
112/114 T	x		x		x
112/114 J	x		x	x	x
105 A		x		x	
105 S	x	x		x	
105 J	x	x	x	x	x

In this proposed rule, RSPA first is proposing to exclude tank cars from Special Provision B14. In conjunction with this proposal, RSPA is proposing to amend Special Provision B74 to authorize: (1) insulated, head shield equipped, Class DOT 105S tank cars; and, (2) non-insulated (or insulated), but thermally protected, head shield equipped, Class DOT 112J, and 114J tank cars. The proposed rule does not authorize DOT 105A, 112/114A, 112/114S, or 112/114T tank cars since these tank cars are not afforded the protection provided by a metal jacket or head shields.

3. Delay October 1, 1993 Implementation of New Packaging Standards for Tank Cars Containing PIH Materials

Any delay of the mandatory compliance date for packagings containing PIH materials will not apply to tank car shipments. Tank cars must conform to the new requirements by October 1, 1993. The continued use of specific existing tank cars will be considered, if it can be demonstrated (i.e., through the exemption process) that those existing tank cars provide an equivalent level of safety to DOT 105S, 112J, or 114J tank cars. Factors that will be considered include the type of material used in the construction of the tank, any increase in the overall shell and head thickness, the use of insulation or thermal protection, the thickness of any tank jacket, the use of fitting protection, and the vapor pressure to burst pressure ratio after subjecting the tank car and the commodity to a 100-minute pool fire. Fire modelling is acceptable.

4. Allow Chlorine (and Other Non-Flammable Gases) Tank Cars To Meet Class DOT 105S Requirements Rather Than Class DOT 105J Requirements.

A petition from the Chlorine Institute (P-1159) indirectly addressed Special Provision B14, but its major area of concern was Note 30 in § 173.314(c), which requires Class DOT 105 tank cars built after September 30, 1991, to meet 105J requirements. In order to meet the "J" requirement, the car must have a thermal protection system that conforms to § 179.105-4 and a tank head puncture resistance system conforming to § 179.105-5. The petitioner asked RSPA to revise Note 30 to allow tank cars containing chlorine and other non-flammable gases to conform to the requirements of DOT Class 105S rather than the 105J requirements. The Class DOT 105S tank car requirements specify only a tank head puncture resistance system. The petitioner also requested, for chlorine, the replacement of Special Provision B14 with a new provision allowing the use of certain types of insulation for chlorine tank cars.

As noted earlier, RSPA is proposing to exclude tank cars from the B14 requirement. In 1981, a joint effort between the Chlorine Institute and the Railway Progress Institute-Association of American Railroads Tank Car Safety Research and Test Project resulted in the development of an insulation system to protect a chlorine tank car involved in a fire. This insulation system maintains back plate (inside surface of the tank shell) temperatures below 250.56 °C (483 °F). Since 1985, chlorine tank cars have been equipped with full head shields and an insulation system that meets the above requirements (the system consists of two inches of ceramic fiber covered by two inches of glass fiber encased in an eleven gauge steel jacket). The insulation system was incorporated into the HMR under

Docket HM-166U. After reviewing the Chlorine Institute's petition, RSPA and FRA have concluded that the current system is acceptable for the transportation of chlorine. The current system nearly conforms to the "J" requirement with the exception that chlorine tank cars do not have a thermal protection system applied to the discontinuities on the tank. Such discontinuities may provide a heat path into the commodity, but the overall heat input would be rather low, especially with the chlorine insulation system. Therefore, it is unlikely that the car will rupture in a 100-minute pool fire environment.

RSPA is proposing to amend § 173.314(c) to require, for all commodities subject to Note 30, that tank cars built after September 30, 1991, must conform to the requirements of Class DOT 105S. For chlorine, the note would further specify insulation requirements adopted under Docket HM-166U.

In an advance notice of proposed rulemaking issued under Docket HM-175A (Specifications for Tank Cars, 55 FR 20252, May 15, 1990), comments were solicited on the use of full head shields and thermal protection for new and existing tank cars transporting compressed gases, materials that meet the criteria of poisonous by inhalation, and reactive materials on tank cars constructed from aluminum or nickel plate. The interested reader is referred to Docket HM-175A for additional information.

B. Petitions Requesting Revisions to Non-Bulk Packaging Requirements for PIH Materials

RSPA received several petitions requesting revisions to non-bulk packaging requirements for materials poisonous by inhalation. These requests included changes to current minimum

thickness and cushioning requirements, additional packaging authorizations, and delay of the October 1, 1993 implementation date.

#### Authorize UN 1H1 Drums Used as Inner Packagings and UN 6HA1 Composite Drums Inside Metal Packagings for Hazard Zone A Materials

In the December 21, 1990 final rule, RSPA stated in the preamble that the use of 1H1 drums as inner packagings and 6HA1 composite packagings (plastic receptacles within steel drums) was authorized for Hazard Zone A materials. However, the regulatory text of § 173.226 did not include provisions for use of these packagings. Therefore, § 173.226(b) would be revised to include these packagings.

#### 2. Use of Plastic Drums as Single Packagings for Materials Poisonous by Inhalation in Hazard Zones A and B

RSPA received one petition (P-1163) requesting authorization for use of plastic drums as single packagings for PIH materials in Hazard Zones A and B, if in dedicated transportation systems (i.e., a shipment from one origin to one destination where the shipper loads the material, blocks and braces the drums, and seals the transport vehicle). Another petitioner (P-1166) submitted a similar request, but limited to Hazard Zone B materials. The first petitioner (P-1163) noted a current unavailability of cost-effective double-drum packaging and cited the safety record of poison inhalation hazard materials packaged in DOT 34 and 2S/6D plastic packagings. Both petitioners claimed that a 110-gallon drum is the smallest commercially-available outer packaging meeting cushioning requirements in §§ 173.226(b)(5) and 173.227(b)(4), which require a minimum of two inches of cushioning material around the body of the inner drum and at least three inches on the top and bottom, between the inner and outer drum. Using a 110-gallon drum would significantly increase operational costs and create substantial reuse and disposal problems, according to one petitioner.

The other petitioner (P-1166) also noted potential difficulties and the additional expense of using 110-gallon drums. Claiming an excellent safety record in shipping materials poisonous by inhalation in this type of packaging, this petitioner requested that RSPA authorize an 85-gallon drum without minimum cushioning requirements.

RSPA does not agree with the petitioner's request (P-1163) to authorize plastic drums as single packagings for poison inhalation hazard materials in Hazard Zone A, even if in

a dedicated transportation system, because single plastic drums do not provide an equivalent level of safety to double drums for Hazard Zone A PIH materials. However, RSPA is proposing plastic drums as single packagings for less toxic PIH materials in Hazard Zone B under highly-controlled conditions. Therefore, § 173.227(c) would be revised to include 1H1 plastic drums in the array of authorized single packagings in dedicated transportation systems.

In addition, based on a review of technical data concerning minimum cushioning thickness requirements between inner and outer drums, RSPA is proposing to remove the minimum cushioning thickness requirement in §§ 173.226 and 173.227.

#### 3. Revise Certain Minimum Thickness Requirements for 1A1 and 6HA1 Drums

One petitioner (P-1166) asked RSPA to change the minimum thickness requirement for 1A1 drums in § 173.226(b)(4) for consistency with § 173.227(b)(3). This would change the minimum thickness for packagings over 120 L from 1.7 mm to 1.35 mm. For packagings under 120 L, the minimum thickness would be changed from 1.3 mm to 0.69 mm or 1.08 mm, depending on the size of the packaging. The petitioner also requested that the minimum thickness requirement for 6HA1 drums in § 173.227(b)(3)(i)(D) be changed to 0.69 mm (0.027 inch). This change would allow a 6HA1 drum used as an inner packaging to have the same required thickness as a 1A1 drum used as an inner packaging. According to this petitioner, both changes are necessary to ensure availability from normal commercial sources.

RSPA partially agrees with this petition and is proposing to revise § 173.227(b)(3)(i)(D) to require a minimum thickness of 0.70 mm (0.027 inch) for 6HA1 drums used as inner packaging. Because the 6HA1 is a two-part packaging, with the plastic inner packaging providing additional containment and structural support, there is no reason why the steel portion of it should be thicker than a single steel drum used in the same service.

The second request, to change the minimum thickness requirements in § 173.226(b)(4) for inner steel drums, for consistency with § 173.227(b)(3), is denied. There is no need for complete consistency between §§ 173.226 and 173.227. Section 173.226 is for materials which are more hazardous than the Hazard Zone B materials covered by § 173.227. A higher packaging integrity should be maintained for Hazard Zone A materials.

#### 4. Delay Mandatory Compliance Date for Ethylene Oxide Packaging Requirements

One petitioner (P-1160), representing two producers of drummed ethylene oxide, requested a one-year delay in the October 1, 1993 mandatory compliance date for new ethylene oxide packaging requirements to facilitate reconsideration of the hazard classification of this material. The petitioner claimed that test data filed with RSPA indicates the toxicity of ethylene oxide to be far less than originally believed. The petitioner noted that the U.S. has proposed to make certain changes in the UN Recommendations for ethylene oxide mixtures. These proposals were adopted by the UN Committee of Experts in its December 1992 session. The petitioner believed this data may lead to a new rulemaking action revising the classification of ethylene oxide, and suggested delaying the October 1, 1993, packaging compliance date for ethylene oxide for one year to allow time for completion of any reclassification efforts. RSPA is not granting a one-year delay in compliance with new ethylene oxide packaging requirements. Packagings that meet the new requirements for ethylene oxide can be obtained, and the use of such packagings is encouraged. RSPA believes that the hazards of ethylene oxide warrant the level of packaging specified in § 173.323, whether the material is classified as poisonous by inhalation or flammable.

#### C. Other Petitions of Significance or General Applicability

In addition to petitions addressing packaging requirements for materials poisonous by inhalation, RSPA has received petitions and correspondence on various other issues such as classification changes for certain PIH materials, a Class 9 placarding exception, confusion over lithium battery provisions, and separation and segregation requirements for highway and rail shipments. Other miscellaneous issues that require clarification or correction, but do not merit a detailed discussion, are addressed in the section-by-section review.

#### 1. Revisions to Classification and Hazard Zones for Certain Materials Poisonous by Inhalation

Based on acute inhalation toxicity data and related information obtained by RSPA, the Hazardous Materials Table would be amended to change the hazard zone for a number of materials poisonous by inhalation, and to remove or to add a number of materials to the

list of materials poisonous by inhalation. For certain materials, this revision would impose more stringent hazard communication and packaging requirements. Because hazard communication requirements are already in effect for materials poisonous by inhalation and new packaging requirements become mandatory October 1, 1993, immediate conformance to more stringent requirements could create a hardship. RSPA is aware of this potential problem and could delay the mandatory compliance date for those materials poisonous by inhalation for which a change in the hazard zone would result in more stringent requirements.

Those materials and a description of the data on which these proposals are based are listed as follows:

a. *Boron trifluoride (UN1741)*. This material is a gas at 20°C and is currently listed as a Hazard Zone A inhalation hazard. The acute inhalation toxicity data used to designate boron trifluoride as a material poisonous by inhalation was: Rat; LCLo:20 ppm/7H (hours). The data was obtained from the Registry of Toxic Effects of Chemical Substances (RTECS) (RTECS: ED1925000). This value, converted to one hour, was approximately: Rat; LCLo:60 ppm/1H, and estimated to fall within Hazard Zone A. The Compressed Gas Association (CGA) submitted data indicating that boron trichloride is less toxic than previously believed (rat; LC50:2051 ppm/1H) and falls within Hazard Zone C. RSPA agrees with the CGA data and is proposing to identify boron trifluoride as a Hazard Zone C material poisonous by inhalation.

b. *Carbonyl sulfide (UN2204)*. This material is a gas at 20°C and is currently listed as a Hazard Zone B inhalation hazard. The acute inhalation toxicity data used to designate carbonyl sulfide as material poisonous by inhalation was: Mouse; LCLo:1200 ppm/35M (minutes). The data was obtained from the RTECS (RTECS: FG6400000). This value, converted to one hour, was approximately: Mouse; LCLo:700 ppm/1H, and estimated to fall within Hazard Zone B. The CGA submitted data indicating that carbonyl sulfide is less toxic than previously believed (rat; LC50:1700 ppm/1H) and falls within Hazard Zone C. RSPA agrees with the CGA data and is proposing to identify carbonyl sulfide as a Hazard Zone C inhalation hazard.

c. *Chlorine trifluoride (UN1749)*. This material is a gas at 20°C and is currently listed as a Hazard Zone A inhalation hazard. The acute inhalation toxicity data used to designate chlorine trifluoride as material poisonous by

inhalation was: Human; LCLo:50 ppm. This value was estimated to be for a one hour exposure and fall within Hazard Zone A. Also, data on rats was available: Rat; LCLo:400 ppm/4H. This value, converted to one hour, was approximately: Rat; LCLo:200 ppm/1H, and estimated to fall within Hazard Zone B. The data was obtained from the RTECS (RTECS: FO2800000). The CGA submitted data indicating that chlorine trifluoride is less toxic than previously thought (rat; LC50:299 ppm/1H), and falls within Hazard Zone B. RSPA agrees with the CGA data and is proposing to identify chlorine trifluoride as a Hazard Zone B inhalation hazard.

d. *Ethylene oxide, pure or with nitrogen (UN1040)*. This material is a gas at 20°C and is currently identified as a Hazard Zone C inhalation hazard. The acute inhalation toxicity data used to designate ethylene oxide as a material poisonous by inhalation was: Rat; LC50:800 ppm/4H. The data was obtained from the RTECS (RTECS: KX2450000). This value, converted to one hour, was: Rat; LC50:1600 ppm/1H. Copies of two recent studies on the acute vapor inhalation toxicity of ethylene oxide in rats were submitted to RSPA. One study was a one-hour exposure; the other study was a four-hour exposure. The one-hour LC50 values were: 5748 ppm for males, 4439 ppm for females, and 5029 ppm for the combined sexes. The four-hour LC50 values were: 1972 ppm for males, 1537 ppm for females, and 1741 ppm for the combined sexes. The four-hour values, converted to one hour, gave the following one-hour LC50 values: 3944 ppm for males, 3074 ppm for females, and 3482 ppm for the combined sexes. Data from these studies indicate that ethylene oxide is less toxic than previously believed and falls within Hazard Zone D. RSPA agrees with this data and is proposing to identify ethylene oxide as a Hazard Zone D inhalation hazard.

e. *Hydrogen chloride, anhydrous (UN1050)*. This material is a gas at 20°C and is currently identified as a Hazard Zone C inhalation hazard. The acute inhalation toxicity data used to designate hydrogen chloride as a material poisonous by inhalation was: Rat; LC50:4701 ppm/30M. The data was obtained from the RTECS (RTECS: MW9610000). This value, converted to one hour, was approximately: Rat; LC50:2350 ppm/1H, and falls within Hazard Zone C. The CGA submitted data indicating that hydrogen chloride is less toxic than previously believed (rat; LC50:3120 ppm/1H), and falls within Hazard Zone D. RSPA agrees

with the data and has proposed to identify hydrogen chloride, anhydrous as a Hazard Zone D inhalation hazard.

f. *Hydrogen chloride, refrigerated liquid (UN2186)*. The data that applies to Hydrogen chloride, anhydrous (UN1050) applies to this material. Therefore, RSPA is proposing to identify hydrogen chloride, refrigerated liquid as a Hazard Zone D.

g. *Hydrogen fluoride, anhydrous (UN1052)*. This material is currently identified as a Hazard Zone C inhalation hazard. The acute inhalation toxicity data used to designate hydrogen fluoride as material poisonous by inhalation was: Rat; LC50:1276 ppm/1H. The data was obtained from the RTECS (RTECS: MW7875000). The CGA submitted data indicating that hydrogen fluoride is more toxic than previously thought (rat; LC50:976 ppm/1H), and falls within Hazard Zone B. RSPA agrees with the CGA data and, therefore, has proposed to identify hydrogen fluoride, anhydrous as a Hazard Zone B inhalation hazard.

h. *Hydrogen iodide, anhydrous (UN2197)*. This material is a gas at 20°C and is currently identified as a Division 2.2 material; however, in the UN Recommendations (seventh revised edition), it is classed as a toxic gas (Class 2, Division 2.3). The RTECS and other sources did not list any acute inhalation toxicity data for hydrogen iodide (RTECS: MW3760000). The CGA submitted data indicating that hydrogen iodide is a gas poisonous by inhalation (rat; LC50:2860 ppm/1H (estimated)), and falls within Hazard Zone C. The CGA estimated the toxicity of hydrogen iodide by analogy with the toxicity of hydrogen bromide (rat; LC50:2860 ppm/1H) (RTECS: MW3850000; LC50 rounded up). The estimated toxicity of this material meets criteria in the HMR for a gas poisonous by inhalation (Class 2, Division 2.3) in Hazard Zone C. Anyone having test data on the acute inhalation toxicity of hydrogen iodide is encouraged to submit the data to RSPA.

i. *Methyl bromide (UN1062)*. This material is a gas at 20°C and is currently identified as a Hazard Zone C inhalation hazard. The acute inhalation toxicity data used to designate methyl bromide as material poisonous by inhalation was: Rat; LC50:302 ppm/8H. The data was obtained from the RTECS (RTECS: PA4900000). This value, converted to one hour, was approximately: Rat; LC50:1007 ppm/1H. The CGA submitted data that was based on a recalculation of the data from the RTECS, indicating that methyl bromide is more toxic than previously believed (rat; LC50:850 ppm/1H), and falls within Hazard Zone B. RSPA agrees with the CGA calculation

and is proposing to identify methyl bromide as a Hazard Zone B inhalation hazard.

*j. Methyl isothiocyanate (UN2477).* This material is a solid at 20°C, with a melting point of 35–36°C. It readily sublimates at room temperature and is treated as a liquid under the HMR. The acute inhalation toxicity data used to designate methyl isothiocyanate as material poisonous by inhalation, Hazard Zone A, was: Rat; LC50:20 ppm/1H. This data was obtained from information on file for a Special Approval that RSPA had issued. The RTECS and other sources did not list any acute inhalation toxicity data for methyl isothiocyanate (RTECS: PA9625000). A copy of a study on the acute inhalation toxicity of methyl isothiocyanate in rats for a one hour exposure was submitted to RSPA. The data indicate that methyl isothiocyanate is less toxic than previously believed (rat; LC50:635 ppm/1H), and falls within Hazard Zone B. RSPA agrees with this data and is proposing to identify methyl isothiocyanate as a Hazard Zone B inhalation hazard.

*k. Methyl mercaptan (UN1064).* This material is a gas at 20°C and is currently identified as a Hazard Zone B inhalation hazard. The acute inhalation toxicity data used to designate methyl mercaptan as material poisonous by inhalation was: Rat; LC50:675 ppm. This value was estimated to be for a one hour exposure and fall within Hazard Zone B. The data was obtained from the RTECS (RTECS: PB4375000). The CGA reviewed the RTECS data and found that the exposure time was four hours. The value, converted to one hour, was: Rat; LC50:1350 ppm/1H. This information indicates that methyl mercaptan is less toxic than previously believed and falls within Hazard Zone C. RSPA agrees with the data and is proposing to identify methyl mercaptan as a Hazard Zone C inhalation hazard.

*l. Methylamine, anhydrous (UN1061).* This material is a gas at 20°C and is currently identified as a Hazard Zone C inhalation hazard. The acute inhalation toxicity data used to designate methylamine as a material poisonous by inhalation was: Mouse; LC50:1889 ppm/2H (converted from: LC50:2400 mg/m<sup>3</sup>/2H). The data was obtained from the RTECS (RTECS: PF6300000). This value, converted to one hour, was approximately: Rat; LC50:2523 ppm/1H. A copy of a study on the acute inhalation toxicity of methylamine in rats for a one-hour exposure was submitted to RSPA. The data indicated that methylamine is less toxic than previously thought (rat; LC50:7110 ppm/1H), and does not meet criteria in

the HMR to be classified as a gas poisonous by inhalation (Class 2, Division 2.3). RSPA agrees with the data. Therefore, the hazard class and division assigned to methylamine, anhydrous would be changed from a gas poisonous by inhalation (Class 2, Division 2.3) to a flammable gas (Class 2, Division 2.1).

*m. Nitric oxide (UN1660).* This material is a gas at 20°C and is currently identified as Hazard Zone B inhalation hazard. The acute inhalation toxicity data used to designate nitric oxide as material poisonous by inhalation was: Rat; LC50:870 ppm (converted from: Rat; LC50:1068 mg/m<sup>3</sup>). The data was obtained from the RTECS (RTECS: QX0525000). The CGA submitted data indicating that nitric oxide is a gas poisonous by inhalation (rat; LC50:115 ppm/1H (estimated)) and falls within Hazard Zone A. The CGA estimated the acute inhalation toxicity of nitric oxide by analogy with the toxicity of nitrogen dioxide (rat; LC50:115 ppm/1H) (CGA data); RTECS data (RTECS: QW9800000); Rat; LC50: 88 ppm/4H). RSPA agrees with the CGA. Therefore, RSPA is proposing to identify nitric oxide as a Hazard Zone A inhalation hazard.

*n. Nitric oxide and dinitrogen tetroxide mixtures (Nitric oxide and nitrogen dioxide mixtures) (UN1975).* This material is a gas at 20°C and is currently identified as a Hazard Zone B inhalation hazard. The acute inhalation toxicity of this material is not "fixed" and depends on the concentration of nitric oxide and dinitrogen tetroxide in each mixture. The data used to designate the mixtures as material poisonous by inhalation was based on each component of the mixture. The acute inhalation toxicity for nitric oxide was: Rat; LC50: 870 ppm (RTECS: QX0525000) and for dinitrogen tetroxide was: Rat; LC50:88 ppm/4H (RTECS: QW9800000), which, converted to one hour, was: Rat; LC50:176 ppm/1H. Based on acute inhalation toxicity data submitted by the CGA on nitric oxide (rat; LC50:115 ppm/1H (estimated)) and nitrogen dioxide (rat; LC50:115 ppm/1H), the mixtures are more toxic than previously thought and fall within Hazard Zone A. RSPA agrees with the CGA and is proposing to identify this material as a Hazard Zone A inhalation hazard.

*o. Perchloryl fluoride (UN3083).* This material is a gas at 20°C and is currently identified as a Hazard Zone C inhalation hazard. The acute inhalation toxicity data used to designate perchloryl fluoride as a material poisonous by inhalation was: Rat; LC50:2000 ppm/40M. The data was obtained from the

RTECS (RTECS: SD1925000). This value, converted to one hour, was approximately: Rat; LC50:1333 ppm/1H and estimated to fall within Hazard Zone C. The CGA submitted data indicating that perchloryl fluoride is more toxic than previously thought (Rat; LC50:770 ppm/1H, which was converted from: Rat; LC50:385 ppm/4H), and falls within Hazard Zone B. RSPA agrees with the CGA data and, therefore, is proposing to identify perchloryl fluoride as a Hazard Zone B inhalation hazard.

*p. Silicon tetrafluoride (UN1859).* This material is a gas at 20°C and is currently identified as a Hazard Zone D inhalation hazard. The RTECS and other sources did not list any acute inhalation toxicity data for silicon tetrafluoride (RTECS: VW2327000). However, the material was classed as a poisonous gas in the UN Recommendations. Therefore, under Docket HM-181, silicon tetrafluoride was classed as a gas poisonous by inhalation (Class 2, Division 2.3) and estimated to fall within Hazard Zone D. The CGA submitted data indicating that silicon tetrafluoride is more toxic than was estimated (mouse; LC50:450 ppm/1H) and falls within Hazard Zone B. RSPA agrees with the CGA data and, therefore, is proposing to identify silicon tetrafluoride as a Hazard Zone B inhalation hazard.

*q. Thionyl chloride (UN1836).* This material is a liquid at 20°C and is currently identified as a Hazard Zone B inhalation hazard. The acute inhalation toxicity data used to designate thionyl chloride as material poisonous by inhalation was: Rat; LC50:500 ppm/1H, and falls within Hazard Zone B. The data was obtained from the RTECS (RTECS: XM5151000). Copies of two studies on the acute inhalation toxicity of thionyl chloride in rats were submitted to RSPA. One study was a one hour exposure; the other study was a four hour exposure. The one hour value was approximately: Rat; LC50:1274 ppm/1H. The four hour value was: Rat; LC50:558 ppm/4H. The four hour value, converted to one hour, was: Rat; LC50:1176 ppm/1H. Data from these studies indicate that thionyl chloride is less toxic than previously thought. RSPA agrees with the data and is proposing to remove thionyl chloride from the list of materials poisonous by inhalation.

*r. Trifluoroacetyl chloride (UN3057).* This material is a gas at 20°C and is currently classified as a Division 2.2 material. In the UN Recommendations it is classed as a toxic gas (Division 2.3). The RTECS and other sources did not list any acute inhalation toxicity data for

trifluorochloroacetyl chloride. Data was submitted to RSPA indicating that the acute inhalation toxicity of trichloroacetyl chloride is as follows: Rat; LC50:>200 ppm but <1000 ppm/1H. Data was obtained from a four hour test, as follows: Rat; LC50:78 ppm/4H. The value, converted to one hour, was: Rat; LC50:156 ppm/1H. However, a limit test conducted on ten rats (5 male and 5 female) indicated that trifluoroacetyl chloride is not as toxic for a shorter exposure time. The rats were exposed to 208 ppm of trifluoroacetyl chloride for one hour. None of the rats died during the exposure or the 14-day post-exposure observation period. RSPA agrees with the data and concludes that trifluoroacetyl chloride is a material poisonous by inhalation and falls within Hazard Zone B.

*s. Trifluorochloroethylene, inhibited, R1113 (UN1082).* This material is a gas at 20°C and is currently classified as a Division 2.1 material. Acute inhalation toxicity data for trifluorochloroethylene was listed in the RTECS (RTECS: KV0505000), as follows: Rat; LC50:1000 ppm/4H. The value, converted to one hour, was: Rat; LC50:2000 ppm/1H, indicating that trifluorochloroethylene is a material poisonous by inhalation and falls within Hazard Zone C. RSPA agrees with this data and is proposing to identify trifluorochloroethylene, inhibited, as Hazard Zone C inhalation hazard.

## 2. Reinstate the Placarding Requirement for Class 9 Materials

In the October 1, 1992 revisions under Docket HM-181, RSPA provided a domestic exception from placarding for Class 9 materials. This exception was based on RSPA's agreement with petitions and comments stating that the Class 9 placard is unnecessary and unduly burdensome in domestic commerce. RSPA received three petitions for reconsideration in response to this action, submitted by the Chemical Waste Transportation Institute (CWTI), the Public Utilities Commission of Ohio (PUCO), and the State of Idaho. A subsequent letter was received from the Conference on Safe Transportation of Hazardous Articles (COSTHA) stating its opposition to the three petitions for reconsideration. PUCO promptly submitted a rebuttal comment to the COSTHA letter, claiming that petitioners opposing the Class 9 placarding exception were never provided evidence justifying the placarding exception nor were they offered an opportunity to comment prior to adoption of the exception.

The three petitioners requesting reconsideration of the domestic

exception from Class 9 placarding requirements stated that the benefits of the Class 9 placards to emergency responders and enforcement personnel outweigh the regulatory burden on industry. The State of Idaho maintained that emergency responders and enforcement personnel need to be aware of the presence of potential health and environmental hazards. CWTI and PUCO claimed that exempting offerors and carriers from additional regulatory burdens, such as registration and fees, routing, permitting, commercial drivers' license (CDL) hazardous materials endorsement, and drug and alcohol testing requirements, does not promote public safety. CWTI suggested that "substantive negative outcomes will result from the abandonment of the Class 9 placard for domestic shipments."

Both PUCO and CWTI suggested narrowing the Class 9 placarding exception. PUCO emphasized that Class 9 hazardous wastes and hazardous substances should not be excepted from placarding requirements. CWTI thought that emergency responders should be consulted about the need for a Class 9 placard. It urged RSPA to open a docket before the October 1, 1994 placarding compliance date to consider a reversal of the Class 9 placarding exception and to solicit comments on this issue.

COSTHA stated that the minimal enhancement of safety does not justify the operational and administrative costs that will be incurred if the Class 9 placarding requirement is reinstated. Furthermore, COSTHA maintained that CWTI and PUCO did not provide any new evidence to support their claims that the Class 9 placard is necessary in domestic transportation. In conclusion, COSTHA urged RSPA to handle any further discussion of the Class 9 placarding exception in a rulemaking action under Docket HM-206.

RSPA continues to believe that the Class 9 placard is unnecessary and unduly burdensome in domestic commerce and, therefore, is denying these petitions for reconsideration. The decision to except Class 9 materials from placarding requirements was based on petitions and comments received from shippers, carriers, and their representatives. These petitioners claimed that the Class 9 placarding requirement imposed an unnecessary burden with no demonstrated safety benefit. One petitioner urged RSPA to consider specifically enumerated secondary costs. Another petitioner referenced small service and consumer-type vehicles carrying only Class 9 materials. The size of these vehicles and loads of less acutely hazardous

commodities are small, yet they are subject to the identical hazard communication system relegated to long-range, heavy hauling, interstate industry. The petitioner emphasized that the issue is not whether the materials should be identified, but rather that the means of identification should be evaluated for additional requirements imposed by other regulations.

In developing the final rule under Docket HM-181, RSPA did not consider all the secondary costs associated with mandatory placarding for Class 9 materials. These secondary costs relate to compliance with additional requirements imposed by the Federal Motor Carrier Safety Regulations (FMCSR), such as the CDL hazardous materials endorsement, routing restrictions in certain States, drug testing, and other applicable FMCSR requirements. With the recent promulgation of regulations under Dockets HM-198A and HM-211 (which expand the scope of the HMR to include elevated temperature materials and marine pollutants), the economic impact of reinstating Class 9 placarding requirements would be dramatic. In addition, regulatory requirements for marking identification numbers on packages containing Class 9 materials provide emergency responders with sufficient information to assess potentially hazardous situations. The overall costs associated with requiring placards for Class 9 materials outweigh the benefits and, therefore, RSPA is denying those petitions which request reinstatement of the Class 9 placarding requirements.

## 3. Clarification of Compliance Date for Limited Quantities and Reclassification to ORM-D

RSPA has learned that there is some confusion as to the applicable compliance date for limited quantity and consumer commodity provisions. The Docket HM-181 final rule imposed a gross weight limit of 30 kg (66 pounds) per package for the "limited quantity" exceptions and the option to reclassify a material as a consumer commodity, ORM-D. The transitional provisions in § 171.14 allow for the continued use of both specification and non-specification packagings authorized under the pre-HM-181 regulations until October 1, 1996. However, there is some concern that, because reclassification of a material to ORM-D includes a weight limitation of 30 kg (66 pounds) per package, new requirements for limited quantities and consumer commodities will become mandatory on October 1, 1993.

Any new requirement effecting a change to packagings for limited quantities or consumer commodities goes into effect October 1, 1996. Until that time, either the pre-HM-181 quantity limits and packagings or the new Docket HM-181 quantity limits and packagings may be used, as long as consistency is maintained. In other words, if the new requirements authorize a greater capacity for each inner packaging than the comparable pre-HM-181 inner packaging quantity limit, and the new, larger packaging is selected, then the 30 kg (66 pounds) gross weight per package limit also applies.

#### 4. Revise Lithium Battery Provisions for Consistency and Clarity

RSPA is proposing several editorial changes to clarify requirements for lithium batteries. First, the cargo aircraft quantity limitation in the § 172.101 Table would be corrected to read "35 kg gross" for solid and liquid cathode lithium batteries. Special provision A12 in § 172.102 would be separated into two special provisions to clarify the requirements on cargo and passenger carrying aircraft. In addition, § 173.185 would be revised to clarify that the exception provided in paragraph (i) applies to all lithium batteries, including rechargeable batteries and batteries contained in equipment.

#### 5. Revise Separation and Segregation Requirements for Rail and Highway Transportation

RSPA adopted, under Docket HM-181, a revised Segregation and Separation Chart of Hazardous Materials (Chart) in §§ 174.81 and 177.848. The revised chart prohibits certain hazardous materials from being transported on the same transport vehicle and requires other categories of hazardous materials to be separated from each other. Two alternatives to accomplish separation are provided. First, transporters can implement systems that achieve separation so that, in the event of leakage from packagings, no commingling of hazardous materials would occur. This alternative is consistent with the philosophy of implementing performance standards in Docket HM-181. Alternatively, transporters can separate specified hazardous materials by a distance of 1.2 meters (4 feet) from each other at a minimum height of 10 centimeters (4 inches) off the floor, without development of performance systems.

Since the issuance of the revised chart, RSPA has received comments from the American Trucking Associations, Inc., the United Parcel

Service, Yellow Freight Systems, and others critical of the 1.2 meter by 10 centimeter separation alternative. Commenters indicate that this alternative places unnecessary burdens on their operations and could cause unnecessary delays. There also is concern that enforcement will be based on the alternative rather than on the performance standard.

Based on the concerns expressed by these commenters, RSPA is proposing to revise §§ 174.81(e)(3) and 177.841(e)(3) by removing the references to the separation distances of 1.2 meters by 10 centimeters. The means of separation used by carriers, thereafter, must ensure that commingling of materials will not occur in the event of leakage from packagings of hazardous materials. Separation must be accomplished by some means of physical separation, such as by the use of non-permeable barriers, non-reactive freight, or non-combustible, non-reactive adsorbents between packagings of materials required to be separated. Restrictions on commingling Class 8 liquids and Classes 4 and 5 materials would be retained so that Class 8 liquids could not be loaded or stored above Class 4 and Class 5 materials.

To provide relief, RSPA also is proposing to allow carload and truckload shipments of Class 8 (corrosive) liquids and Class 4 (flammable solid) and Class 5 (oxidizer) materials, based on the shipper's determination that no dangerous evolution of heat or gas would occur should the contents of the packagings commingle.

Commenters suggested that RSPA remove the requirement to separate Class 8 liquids from Division 2.1 gases. RSPA agrees with these comments and is proposing to remove the letter "O" at the intersecting columns for Division 2.1 gas and Class 8 liquids.

#### 6. Construction of Stainless Steel Pressure Tank Cars

RSPA has received several petitions for rulemaking and exemption applications requesting that stainless steel be authorized in the construction of pressure tank cars for materials such as chlorosulfonic acid and nitrogen tetroxide. RSPA and FRA agree with petitioners that there is a need to amend the regulations to authorize Type 304L and 316L stainless steel in the construction of pressure tank cars. Therefore, RSPA is proposing to add Type 304L and 316L as authorized materials for the construction of DOT 105, 109, 112 and 114 tank cars.

### III. Review by Section

#### Part 171

**Section 171.8.** Definitions would be added for "Explosive material," "Miscellaneous hazardous material," "Nonflammable gas," and "Poisonous gas" to reference the appropriate hazard class definition section in part 173. In addition, the definitions for "Flash point" and "Etiologic agent" would be revised to correctly reference the applicable hazard class definition in part 173.

#### Part 172

**Section 172.101.** Based on the merits of a petition for rulemaking (P-1152), paragraphs (c)(12)(i) and (c)(12)(ii) would be revised to add a requirement to consider hazard zone, if applicable, when selecting a proper shipping name for a material.

In the § 172.101 Hazardous Materials Table, the entries for "Lithium battery, liquid cathode" and "Lithium battery, solid cathode" would be amended by correcting the cargo aircraft quantity limitation to read "35 kg gross" for solid and liquid cathode lithium batteries.

Entries for "Boron trichloride," "Carbonyl sulfide," "Chlorine trifluoride," "Ethylene oxide," "Hydrogen chloride, anhydrous," "Hydrogen chloride, refrigerated liquid," "Hydrogen fluoride, anhydrous," "Hydrogen iodide, anhydrous," "Methyl bromide," "Methyl isothiocyanate," "Methyl mercaptan," "Methylamine, anhydrous," "Nitric oxide," "Nitric oxide and dinitrogen tetroxide mixtures," "Perchloryl fluoride," "Silicon tetrafluoride," "Thionyl chloride," "Trifluoroacetylchloride," and "Trifluorochloroethylene, inhibited" would be revised as a result of new toxicity data which changes their hazard classification or hazard zone. In addition, for consistency with the proposed hazard zone change for ethylene oxide, carbon dioxide and ethylene oxide mixtures consisting of more than 6 percent ethylene oxide would be classed in Division 2.1 with a Special Provision 5 in Column 7 to indicate a potential poisonous-by-inhalation hazard.

RSPA is proposing new domestic entries for "Methanol or Methyl alcohol" and "Methyl cyanide" that would not specify a "POISON" subsidiary hazard label. These materials do not meet the hazard classification criteria for a Division 6.1 material under the HMR. In addition, RSPA is proposing a new domestic entry for "Chloroform" to change the hazard classification of this material from



Division 6.1, PG II to Division 6.1, PG III. The proposals for "Methyl cyanide" and "Chloroform" are consistent with recent amendments to the UN Recommendations.

By adding a new Special Provision 30 to the domestic entry for "Sulfur", RSPA is proposing to except from the HMR sulfur which is transported domestically in non-bulk packagings and sulfur which is formed to a specific shape (e.g., prills, granules, pellets, pastilles, or flakes). Data supplied to RSPA indicates that the hazards of sulfur are far less than originally believed. In addition, in the future, RSPA will examine the issue of regulating all other forms of sulfur in domestic transportation.

RSPA is proposing to reclassify PETN as a Division 1.1D explosive. Recent data received by RSPA substantiates the UN classification of PETN; therefore, RSPA is proposing to reclassify PETN as a Division 1.1D explosive.

For the entry "Poisonous liquid, oxidizing, n.o.s. Inhalation hazard, packing group I, Zone A", RSPA is proposing to correct Column 9(b), which authorizes a 2.5 L quantity limitation on cargo aircraft. This entry is not consistent with the quantity limits for other poisonous by inhalation liquids, which prohibit any quantity of these materials on passenger or cargo aircraft. RSPA, therefore, proposes to revise the Column 9(b) entry from "2.5 L" to "Forbidden".

*Section 172.102.* Special Provision A12 would be separated into two special provisions to clarify the requirements for lithium batteries on cargo and passenger carrying aircraft. Under this separation, Special Provision 29 would be added and Special Provision A12 would be revised.

Based on the merits of petitions, Special Provisions B14 and T38 would be revised to delay, until October 1, 1994, compliance with these provisions for bulk packagings containing poisonous by inhalation materials which, when in contact with moisture, become highly corrosive and could cause corrosion under an insulation blanket. In addition, the applicability of Special Provision B14 to tank cars would be removed.

Special Provision B42 would be revised by removing the authorizations for DOT 105A and 105S tank cars to clarify that the only tank car authorized for acrolein, inhibited is the DOT 105J500W specification tank car. This clarification is needed because acrolein, inhibited is assigned both Special Provisions B42 and B72. Special Provision B42 currently authorizes DOT 105A and 105S tank cars, in addition to

a DOT 105J tank car, but B72 restricts the packaging authorization to a DOT 105J500W tank car.

Special Provision B65 would be amended by revising the first sentence to read "Notwithstanding the provisions of § 173.244 of this subchapter, only DOT 105A500W tank cars are authorized." This revision would clarify that, despite the authorization in § 173.244 for use of other tank cars, the only tank car authorized for hydrocyanic acid, aqueous solutions, and hydrogen cyanide, anhydrous, stabilized is the DOT 105A500W tank car. However, this restriction does not supersede § 173.31(a)(3), which permits a class DOT 105S or 105J tank car (a higher-integrity tank car) to be used if it has an equal or higher marked test pressure than the DOT 105A500W.

"Acetone cyanohydrin, stabilized" is assigned Special Provisions B74 and B76. Special Provision B74 currently authorizes DOT 105J300W, 105J300ALW, 112J340W, 112T340W, 114J340W, and 114T340W tank cars. However, Special Provision B76 authorizes DOT 105S500W tank cars, but the safety relief devices on such cars must have a start-to-discharge pressure of 1,034 kPa (150 psi). Therefore, Special Provision B74 would be removed from Column 7 of the § 172.101 Hazardous Materials Table for "Acetone cyanohydrin, stabilized" and Special Provision B76 would be revised to include the tank cars currently in Special Provision B74, provided the safety relief devices on those cars have a set-to-discharge pressure setting of 1,034 kPa.

#### Part 173

*Section 173.34.* Various sources have informed RSPA that the terminology "Poison A gas or liquid" in § 173.34(d)(3) should be revised to reflect consistency with the new hazard classification nomenclature. RSPA agrees and is proposing that the phrase "Poison A gas or liquid" be revised to read "Division 2.3 gas in Hazard Zone A or a Division 6.1 PG I liquid in Hazard Zone A". RSPA is soliciting comments on the potential implications of this terminology change. Previously, safety relief devices were prohibited on cylinders containing Poison A gases or liquids but generally were required on cylinders containing other gases or liquids. Based on the defining criteria for materials poisonous by inhalation, some materials previously classed as Poison A materials are now in Hazard Zones B or C and thus might be required to be packaged in cylinders having safety relief devices. Conversely, certain gases and liquids fall into Hazard Zone

A that previously were not classed as Poison A materials. Cylinders for these Hazard Zone A materials would be prohibited from having safety relief devices. Detailed comments addressing the specific impacts of this proposed terminology change are requested. Is the prohibition against safety relief devices on cylinders containing Hazard Zone A materials necessary? If warranted, RSPA may delay (beyond October 1, 1993) any retrofitting requirements involving safety relief devices that might result from the adoption of this terminology change.

*Section 173.54.* RSPA is proposing to add new paragraph (l), "Forbidden explosives," to clarify that explosive articles shipped with their means of initiation or ignition installed must be approved in accordance with § 173.56. In conjunction with this proposed addition, RSPA would revise Special Provision 109 and remove paragraph (b) of § 173.63.

*Section 173.63.* RSPA has learned that certain offerors of Class 1 detonating cords cannot utilize a packaging exception in § 173.63 because carriers refuse to accept this material when classed as Division 1.4D and marked "UN 0065". To resolve this problem, RSPA proposes to add a provision in § 173.63(a) to clarify that if detonating cord is offered or transported domestically as Division 1.4D, the identification number "UN 0289" should be used.

*Section 173.185.* Paragraph (i) would be revised to clarify that the exception provided in this paragraph applies to all lithium batteries, including rechargeables, and those contained in equipment.

*Section 173.226.* In the December 21, 1990 final rule, RSPA stated in the preamble that the use of 1H1 drums as inner packaging and 6HA1 composite drums inside metal packagings were authorized for Hazard Zone A materials. However, the regulatory text of § 173.226 did not include provisions for use of these packagings. Therefore, § 173.226(b) would be revised to include these packagings.

*Sections 173.226 and 173.227.* The required minimum thickness for cushioning in paragraphs (b)(5) and (b)(4), respectively, would be removed. This proposed revision is based on the merits of two petitions for rulemaking (P-1163 and P-1166), discussed earlier in this document, which noted the unavailability of cost-effective outer drums having a capacity less than 110 gallons for materials poisonous by inhalation.

*Section 173.227.* Proposed revisions to this section are based on the merit of

petitions (P-1163 and P-1166). First, the minimum thickness requirement in paragraph (b)(3)(i)(D) for a 6HA1 drum used as an inner packaging would be decreased to 0.70 mm (0.027 inch). In addition, paragraph (c) would be revised to authorize 1H1 plastic drums as single packagings under the provisions of this section.

*Section 173.306.* In the December 20, 1991 revisions to the HM-181 final rule, paragraphs (a)(3)(i) and (b)(1) were amended to increase the capacity of aerosols to one liter. Currently, the one liter SI measurement is shown in parentheses, preceded by "50 cubic inches". As prescribed in § 171.10, where SI units appear, they are the regulatory standard, with U.S. customary units to be shown for information only. Therefore, RSPA is proposing to revise § 173.306(a)(3)(i) and (b)(1) to clarify that one liter is the regulatory standard. In addition, the equivalent customary measurement of 50 cubic inches is incorrect, and RSPA is proposing "61.0 cubic inches" as the approximate equivalent of one liter.

RSPA also is proposing a revision to paragraph (h)(3) to reference the exception provided in § 173.156 for ORM-D materials. Adding this reference would be consistent with other packaging sections addressing ORM-D materials.

*Section 173.314.* Note 30 in paragraph (c) would be revised to specify insulation requirements for chlorine and to require that tank cars built after September 30, 1991, must conform to the requirements of Class DOT 105S. A proposed editorial correction to Note 21 would remove the parentheses in "§ 173.24(b)" to correctly read "§ 173.24b".

*Section 173.323.* Currently the HMR contains a requirement that drums intended to contain ethylene oxide must be fire-tested in accordance with CGA Pamphlet C-14 or other equivalent method. Ethylene oxide vapor, when exposed to fire, becomes very unstable and poses a danger of explosion. Tests conducted in the 1940s indicated the failure of ethylene oxide containers when exposed to fire. Subsequently, drums essentially the same as the DOT 5P successfully withstood fire exposure testing. Furthermore, safety relief devices used today are basically identical to those tested in the 1940s. Because there is a proven record of drums successfully passing the fire test, RSPA proposes to remove the requirement contained in § 173.323(b)(5) that drums be fire-tested. Instead, RSPA would require that these drums be capable of passing such a test.

#### Part 174

*Section 174.83.* This section was revised under the Docket HM-181 final rule, and incorporated text from the former § 174.84. A change in the wording of paragraph (b) may result in a misinterpretation that could affect the safe handling of placarded Trailers-On-Flatcars (TOFC) and Containers-On-Flatcars (COFC). The revised paragraph (b) could be interpreted to allow cars moving under their own momentum to strike cars placarded in Division 1.1 or 1.2, tank cars placarded in Division 2.3 Hazard Zone A or Division 6.1 PG I Hazard Zone A, Class DOT 113 tank cars placarded in Division 2.1, placarded flatcars, or flatcars transporting placarded vehicles or containers. Therefore, RSPA is proposing that paragraph (b) be revised to clarify that such a practice is not permitted.

#### Parts 174 and 177

*Sections 174.81 and 177.848.* RSPA is proposing to revise §§ 174.81(e)(3) and 177.848(e)(3) by removing the references to the separation distances of 1.2 meters by 10 centimeters. The means of separation used by carriers must ensure that commingling of materials will not occur in the event of leakage from packagings of hazardous materials. Separation must be accomplished by some means of physical separation, such as by the use of non-permeable barriers, non-reactive freight, or non-combustible, non-reactive adsorbents between packagings of materials required to be separated. However, in no case may Class 8 (corrosive) liquids be loaded or stored above Class 4 (flammable solid) and Class 5 (oxidizing) materials.

RSPA is also proposing a provision that authorizes carload or truckload shipments of Class 8 (corrosive) liquids and Class 4 (flammable) and Class 5 (oxidizers), based on the shipper's determination that no dangerous evolution of heat or gas would occur should the contents of the packagings commingle. In addition, RSPA is proposing to remove the letter "O" at the intersecting columns for Division 2.1 (flammable) gas and Class 8 (corrosive) liquids.

#### Part 179

*Section 179.100-7.* Based on petitions for rulemaking and applications for exemptions, this section would be amended to add Type 304L and 316L as an authorized material for the construction of DOT 105, 109, 112 and 114 tank cars.

*Section 179.100-10.* RSPA is proposing, in § 179.100-7, to authorize

Type 304L and 316L stainless steels for construction of DOT pressure tank cars. In conjunction with this proposal, a new paragraph (c) would be added to § 179.100-10 to not require postweld heat treatment of Type 304L and 316L stainless steels.

#### IV. Rulemaking Analyses and Notices

##### *Executive Order 12291 and DOT Regulatory Policies and Procedures*

This proposed rule does not meet the criteria specified in section 1(b) of Executive Order 12291 and, therefore, is not a major rule. The proposed rule is not considered significant under the regulatory procedures of the Department of Transportation. A regulatory evaluation is available for review in the Docket.

##### *Executive Order 12612*

The proposed rule has been analyzed in accordance with the principles and criteria in Executive Order 12612 ("Federalism"). The Hazardous Materials Transportation Act (49 U.S.C. App. 1801 et. seq.) contains an express preemption provision (49 U.S.C. App. 1804(a)(4)) that preempts State, local, and Indian tribe requirements on certain covered subjects. With certain exceptions, a non-Federal requirement is preempted if: (1) Compliance with both the non-Federal and the Federal requirement is not possible; (2) the non-Federal requirement creates an obstacle to accomplishment of the Federal law or regulations; or (3) it is preempted under 49 U.S.C. App. 1804(a)(4), concerning certain covered subjects, or 49 U.S.C. App. 1804(b), concerning highway routing. Covered subjects include:

- (i) The designation, description, and classification of hazardous materials;
- (ii) The packing, repacking, handling, labeling, marking, and placarding of hazardous materials;
- (iii) The preparation, execution, and use of shipping documents pertaining to hazardous materials and requirements respecting the number, content, and placement of such documents;
- (iv) The written notification, recording, and reporting of unintentional release in transportation of hazardous material; or
- (v) The design, manufacturing, fabrication, marking, maintenance, reconditioning, repairing, or testing of a package or container which is represented, marked, certified, or sold as qualified for use in the transportation of hazardous materials. (49 U.S.C. App. 1804(a)(4) (A) and (B)).

Section 1804(a)(4) preempts "any law, regulation, order, ruling, provision, or other requirement of a State or political

subdivision thereof or an Indian tribe \* \* \* "which concerns a "covered subject" and "is not substantively the same" as a provision in the HMTA or regulations promulgated pursuant to the HMTA. (State and Indian tribe hazardous materials highway routing requirements governed by 49 U.S.C. App. 1804(b), and requirements "otherwise authorized by Federal law" are excepted.) In a final rule published in the *Federal Register* on May 13, 1992 (57 FR 20424, 20428), RSPA defined "substantively the same" to mean "conforms in every significant respect to the Federal requirement. Editorial and other similar *de minimis* changes are permitted." 49 CFR 107.202(d). Thus, RSPA lacks discretion in this area, and preparation of a federalism assessment is not warranted.

The proposed rule concerns the following covered subjects:

The designation, description, and classification of hazardous materials; definitions added or revised in § 171.8; requirement added to consider hazard zone of material when selecting proper shipping name; changes to hazard classification and/or hazard zone for 18 PIH materials; chloroform hazard classification change from PG II to PG III; reclassification of PETN to Division 1.1D explosive; clarification to lithium batteries provision that the exception from the regulations applies to all lithium batteries, including rechargeables and those contained in equipment; and clarification on ORM-D exceptions for gases.

The packing, repacking, handling, labeling, marking, and placarding of hazardous materials: Correct cargo aircraft quantity limitations for lithium batteries and for poisonous liquid, oxidizing, n.o.s. in PG I Hazard Zone A; removal of POISON label for methanol and methyl cyanide; special provisions revisions for lithium batteries on cargo and passenger carrying aircraft; delay in compliance date for insulation requirements for PIH bulk packagings; changes to tank car packaging authorizations for acrolein, hydrocyanic acid/hydrogen cyanide, and acetone cyanohydrin; terminology change for PIH materials in cylinders which may result in changes to safety relief valve requirements; relief for certain DoD Class 1 materials shipments; change in identification number prefix; clarification on exception for detonating cords; new packaging authorizations and other relief for PIH packagings; clarification on ORM-D packagings for gases; changes to tank car note for compressed gases in tank cars; delay in mandatory compliance date for

segregation table; and clarification on switching placarded cars.

The design, manufacturing, fabrication, marking, maintenance, reconditioning, repairing, or testing of a package or container which is represented, marked, certified, or sold as qualified for use in the transportation of hazardous materials: Capability requirement rather than fire test for ethylene oxide drums; and authorization to use stainless steel in constructing certain tank cars for PIH materials and exception for postweld heat treatment.

If adopted as final, this rule would preempt any State, local, or Indian tribe requirements relating to covered subjects that are not "substantively the same" as Federal requirements. Section 1804(a)(5)(B) states that the effective date of Federal preemption "may not be earlier than the 90th day following the date [a final rule is issued] and may not be later than the last day of the two-year period beginning on the date of such issuance." RSPA invites comments on when this Federal preemption should take effect.

#### *Regulatory Flexibility Act*

I certify this proposal will not, if promulgated, have a significant economic impact on a substantial number of small entities. There are no direct or indirect adverse economic impacts for small units of government, businesses, or other organizations. This certification is subject to modification as a result of a review of comments received in response to this proposal.

#### *Paperwork Reduction Act*

There are no new information collection requirements in this proposed rule.

#### *National Environmental Policy Act*

This proposed rule is not a major Federal action significantly affecting the quality of the human environment and, therefore, does not require the preparation of an environmental assessment or an environmental impact statement under the National Environmental Policy Act (42 U.S.C. 4321).

#### *Regulation Identifier Number (RIN)*

A regulation identifier number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN number contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

#### List of Subjects

##### *49 CFR Part 171*

Exports, Hazardous materials transportation, Hazardous waste, Imports, Oil, Reporting and recordkeeping requirements.

##### *49 CFR Part 172*

Hazardous materials transportation, Hazardous waste, Labels, Markings, Oil, Packaging and containers, Reporting and recordkeeping requirements.

##### *49 CFR Part 173*

Hazardous materials transportation, Packaging and containers, Radioactive materials, Reporting and recordkeeping requirements, Uranium.

##### *49 CFR Part 174*

Hazardous materials transportation, Radioactive materials, Railroad safety.

##### *49 CFR Part 177*

Hazardous materials transportation, Motor carriers, Radioactive materials, Reporting and recordkeeping requirements.

##### *49 CFR Part 179*

Hazardous materials transportation, Railroad safety, Reporting and recordkeeping requirements.

In consideration of the foregoing, 49 CFR chapter I would be amended as follows:

#### **PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS**

1. The authority citation for part 171 would continue to read as follows:

**Authority:** 49 App. U.S.C. 1802, 1803, 1804, 1805, 1808, and 1818; 49 CFR part 1.

2. In § 171.8, the following definitions would be added or revised as indicated, in appropriate alphabetical order to read as follows:

##### **§ 171.8 Definitions and abbreviations.**

[Add:]

\* \* \* \* \*

*Explosive.* See § 173.50 of this subchapter.

\* \* \* \* \*

*Miscellaneous hazardous material.* See § 173.140 of this subchapter.

\* \* \* \* \*

*Nonflammable gas.* See § 173.115 of this subchapter.

\* \* \* \* \*

*Poisonous gas.* See § 173.115 of this subchapter.

\* \* \* \* \*

[Revise:]

\* \* \* \* \*

*Etiologic agent.* See § 173.134 of this subchapter.

\* \* \* \* \*

*Flash point.* See § 173.120 of this subchapter.

\* \* \* \* \*

**PART 172—HAZARDOUS MATERIALS TABLE, SPECIAL PROVISIONS, HAZARDOUS MATERIALS COMMUNICATIONS, EMERGENCY RESPONSE INFORMATION, AND TRAINING REQUIREMENTS**

3. The authority citation for part 172 would continue to read as follows:

**Authority:** 49 U.S.C. App. 1803, 1804, 1805, 1808; 49 CFR part 1, unless otherwise noted.

4. In § 172.101, paragraph (c)(12)(i) and the first sentence of paragraph (c)(12)(ii) would be revised to read as follows:

**§ 172.101 Purpose and use of hazardous materials table.**

\* \* \* \* \*

(c) \* \* \*

(12) \* \* \*

(i) If it is specifically determined that a material meets the definition of a hazard class, packing group or hazard zone, other than the class, packing group or hazard zone shown in association with the proper shipping name, or does not meet the defining criteria for a subsidiary hazard shown in Column 6 of the Table, the material shall be described by an appropriate

proper shipping name listed in association with the correct hazard class, packing group, hazard zone, or subsidiary hazard for the material.

(ii) *Generic or n.o.s. descriptions.* If an appropriate technical name is not shown in the Table, selection of a proper shipping name shall be made from the generic or n.o.s. descriptions corresponding to the specific hazard class, packing group, hazard zone, or subsidiary hazard, if any, for the material. \* \* \*

\* \* \* \* \*

5. In § 172.101, the Hazardous Materials Table would be amended by removing, adding, or revising, in appropriate alphabetical sequence, the following entries to read as follows:

SECTION 172.101.—HAZARDOUS MATERIALS TABLE

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identification numbers	Packing group	Label(s) required if not excepted	Special provisions	Packaging authorizations (§ 173.***)			Quantity limitations		Vessel stowage requirements	
							Excep-tions	Nonbulk packag-ing	Bulk packag-ing	Pas-senger aircraft or rail car	Cargo aircraft only	Vessel stowage	Other provi-sions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8A)	(9A)	(9B)	(10A)	(10B)
	[Remove] Carbon dioxide and ethylene oxide mixtures with more than 6 per cent but not more than 25 percent ethylene oxide. Carbon dioxide and ethylene oxide mixtures with more than 25 percent ethylene oxide.	2.2	UN1041		Flammable Gas		None	304	314, 315.	Forbid-den.	25 kg	D	40
		2.3	UN1041		Poison Gas	6, B9, B14.	None	304	314, 315.	Forbid-den.	25 kg	D	40
	Chloroform	6.1	UN1888	II	Poison	N36, T14.	None	202	243	5 L	60 L	A	40
	Methanol or Methyl alcohol.	3	UN1230	II	Flammable Liquid, Poison	T8	None	202	242	1 L	60 L	B	40
	Methyl cyanide	3	UN1648	II	Flammable Liquid, Poison	T14	None	202	243	1 L	60 L	B	40
	[Add]												
	Carbon dioxide and ethylene oxide mixtures with more than 6% ethylene oxide.	2.1	UN1041		Flammable Gas	5	None	304	314, 315.	Forbid-den.	25 kg	D	40
D	Chloroform	6.1	UN1888	III	Keep Away From Food	N36, T14.	153	203	241	5 L	60 L	A	40
I	Chloroform	6.1	UN1888	II	Poison	N36, T14.	None	202	241	5 L	60 L	A	40
D	Methanol or Methyl alcohol.	3	UN1230	II	Flammable Liquid	T8	150	202	242	1 L	60 L	B	40
I	Methanol or Methyl alcohol.	3	UN1230	II	Flammable Liquid, Poison	T8	None	202	242	1 L	60 L	B	40
D	Methyl cyanide	3	UN1648	II	Flammable Liquid	T14	150	202	242	1 L	60 L	B	40
I	Methyl cyanide	3	UN1648	II	Flammable Liquid, Poison	T14	None	202	242	11	60 L	B	40

[Revise]

UN Number	Proper Name	Class	Section	Subsection	Other	Quantity	Label
2.3 UN2197	Hydrogen iodide, anhydrous.	Poison Gas	3, B14	None	304	314, 315.	Forbid-den. D
9 UN3091	Lithium battery, contained in equipment.	Class 9	18, 29, A12.	185(i)	185	None	Forbid-den. A
9 UN3090	Lithium battery, liquid cathode.	Class 9	29	185(i)	185	None	Forbid-den. A
9 UN3090	Lithium battery, solid cathode.	Class 9	29	185(i)	185	None	Forbid-den. A
3 UN2477	Methyl Isothiocyanate	Flammable Liquid, Poison	2, B9, B14, B32, B74, T38, T43, T45.	None	227	244	Forbid-den. A
2.1 UN1061	Methylamine, anhydrous	Flammable Gas		306	304	314, 315.	150 kg. B
1.1D UN0150	Pentaerythrite tetranitrate or Pentaerythritol tetranitrate or PETN, wetted with not less than 25 percent water, by mass or Pentaerythrite tetranitrate or Pentaerythritol tetranitrate or PETN, desensitized with not less than 15 percent phlegmatizer by mass.	Explosive 1.1D	117	None	62	None	Forbid-den. B
9 NA1350	Sulfur	Class 9	30, A1	None	None	240	25 kg. A
8 UN1836	Thionyl chloride	Corrosive	A7, B6, B10, N34, T42.	None	201	243	2.5 L. C
2.3 UN3057	Trifluoroacetylchloride	Poison Gas	2, B9, B14.	None	304	314, 315.	25 kg. D

SECTION 172.101.—HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identification numbers	Packing group	Label(s) required if not excepted	Special provisions	Packaging authorizations (§173.***)			Quantity limitations		Vessel stowage requirements	
							Excep-tions	Nonbulk packag-ing	Bulk packag-ing	Pas-senger aircraft or rail car	Cargo aircraft only	Vessel stowage	Other provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8A)	(9A)	(9B)	(10A)	(10B)
	Trifluorochloroethylene, inhibited, R1113.	2.3	UN1082		Poison Gas	3, B14	None	304	314, 315.	Forbid-den.	150 kg	B	40

**§ 172.101 [Amended]**

6. In addition, in the § 172.101 Hazardous Materials Table, the following changes would be made:

a. For the entry "Acetone cyanohydrin, stabilized", in Column (7), Special Provision "B74," would be removed.

b. For the entry "Boron trichloride", in Column (7), Special Provision "1," would be revised to read "3,".

c. For the entry "Carbonyl sulfide", in Column (7), Special Provisions "2, B9," would be revised to read "3,".

d. For the entry "Chlorine trifluoride", in Column (7), Special Provision "1," would be revised to read "2,".

e. For the entry "Ethylene oxide, pure or with nitrogen", in Column (7), Special Provision "3" would be revised to read "4" .

f. For the entry "Hydrogen chloride, anhydrous", in Column (7), Special Provision "3" would be revised to read "4" .

g. For the entry "Hydrogen chloride, refrigerated liquid", in Column (7), Special Provision "3," would be revised to read "4,".

h. For the entry "Hydrogen fluoride, anhydrous", in Column (7), Special Provision "3," would be revised to read "2,".

i. For the entry "Methyl bromide", in Column (7), Special Provision "3," would be revised to read "2, B9,".

j. For the entry "Methyl mercaptan", in Column (7), Special Provisions "2," and "B9," would be removed and Special Provision "3," would be added in appropriate alpha-numeric order.

k. For the entry "Nitric oxide", in Column (7), Special Provision "2," would be revised to read "1,".

l. For the entry "Nitric oxide and dinitrogen tetroxide mixtures", in Column (7), Special Provision "2" would be revised to read "1,".

m. For the entry "Perchloryl fluoride", in Column (7), Special Provision "3," would be removed and Special Provisions "2," and "B9," would be added in appropriate alpha-numeric order.

n. For the entry "Silicon tetrafluoride", in Column (7), Special Provision "4" would be revised to read "2" .

6a. In § 172.102, the following special provisions would be added, removed, or revised, as indicated:

a. In paragraph (c)(1), Special Provisions 29 and 30 would be added and Special Provision 109 would be revised.

b. In paragraph (c)(2), Special Provision A12 would be revised.

c. In paragraph (c)(3), Special Provisions B14, B42, B65, B74, and B76 would be revised.

d. In paragraph (c)(7)(ii), Special T38 would be revised.

The revisions and additions would read as follows:

**§ 172.102 Special provisions.**

\* \* \* \* \*

(c) \* \* \*

(1) \* \* \*

*Code/Special Provisions*

\* \* \* \* \*

29 Lithium batteries or lithium batteries contained in equipment are forbidden for transportation by passenger-carrying aircraft and passenger-carrying rail car unless approved by the Associate Administrator for Hazardous Materials Safety.

30 Sulfur which is transported domestically is not subject to the requirements of this subchapter if transported in a non-bulk packaging or is formed to a specific shape (e.g., prills, granules, pellets, pastilles, or flakes).

\* \* \* \* \*

109 Rocket motors must be nonpropulsive in transportation unless approved in accordance with § 173.56 of this subchapter. A rocket motor to be considered "nonpropulsive" must be capable of unrestrained burning and must not appreciably move in any direction when ignited by any means.

\* \* \* \* \*

(2) \* \* \*

*Code/Special Provisions*

\* \* \* \* \*

A12 Lithium batteries in equipment, which have been approved by the Associate Administrator for Hazardous Materials Safety, must not exceed, in any piece of equipment, 12 g of lithium or lithium alloy per cell and 500 g of lithium or lithium alloy per battery.

\* \* \* \* \*

(3) \* \* \*

*Code/Special Provisions*

\* \* \* \* \*

B14 Each bulk packaging, except a tank car or a multi-unit-tank car tank, must be insulated with an insulating material so that the overall thermal conductance at 15.5°C (60°F) is no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour per square foot per degree Fahrenheit) temperature differential. Insulating materials must not promote corrosion to steel when wet. Notwithstanding the requirements in § 171.14(b)(4)(ii) of this subchapter, compliance with this provision is delayed until October 1, 1994, for a bulk packaging containing a material poisonous by inhalation which, when in contact with moisture, becomes highly corrosive and could cause corrosion under an insulation blanket.

\* \* \* \* \*

B42 Each 105J500W tank car must be marked as 105J200W. Each tank car must

have a safety relief valve with a start-to-discharge pressure of 1,034 kPa (150 psig).

\* \* \* \* \*

B65 Notwithstanding the provisions of § 173.244 of this subchapter, only DOT 105A500W tank cars are authorized. Each 105J500W tank car must be marked as 105J300W. Each tank car must have a safety relief valve with a start-to-discharge pressure of 1,551 kPa (225 psig).

\* \* \* \* \*

B74 Notwithstanding the requirements of § 173.244 of this subchapter, only the following are authorized: DOT 105S300W, 105S300ALW, 112J340W, and 114J340W tank cars; and Class DOT 106 and 110 multi-unit-tank car tanks.

B76 Each tank car must be marked DOT 105S200W, 105S200ALW, 112J200W, and 114J200. Each tank car must have a safety relief valve with a start-to-discharge pressure of 1,034 kPa (150 psig).

\* \* \* \* \*

(7) \* \* \*

(ii) \* \* \*

*Code/Special Provisions*

\* \* \* \* \*

T38 Each tank must be insulated with an insulating material so that the overall thermal conductance at 15.5°C (60°F) is no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour per square foot per degree Fahrenheit) temperature differential. Insulating materials must not promote corrosion to steel when wet. Notwithstanding the requirements in § 171.14(b)(4)(ii) of this subchapter, compliance with this provision is delayed until October 1, 1994, for a bulk packaging containing a material poisonous by inhalation which, when in contact with moisture, becomes highly corrosive and could cause corrosion under an insulation blanket.

\* \* \* \* \*

**PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS**

7. The authority citation for part 173 would continue to read as follows:

Authority: 49 U.S.C. App. 1803, 1804, 1805, 1806, 1807, 1808, 1817; 49 CFR part 1, unless otherwise noted.

**§ 173.34 [Amended]**

8. In § 173.34, in paragraph (d)(3), the wording "Poison A gas or liquid" would be revised to read "Division 2.3 or Division 6.1 materials in Hazard Zone A" .

9. In § 173.54, paragraph (l) would be added to read as follows:

**§ 173.54 Forbidden explosives.**

\* \* \* \* \*

(l) An explosive article with its means of initiation or ignition installed, unless approved in accordance with § 173.56.



§ 173.62 [Amended]

10. In § 173.62, the "Explosives Table" in paragraph (b) would be amended by removing the entry "NA0150 \* \* \* E-3" and adding, in appropriate alpha-numerical order, the entry "UN0150 \* \* \* E-3".

§ 173.63 [Amended]

11. In § 173.63, the following changes would be made:

a. In paragraph (a) introductory text, the wording "offered for transportation domestically and transported as Division 1.4 Compatibility Group D (1.4D) explosives," would be revised to read "offered for transportation domestically and transported as Cord, detonating (UN 0289), Division 1.4 Compatibility Group D (1.4D) explosives,".

b. Paragraph (b) would be removed and reserved.

12. In § 173.185, paragraph (a), paragraph (g)(1), the introductory text of paragraph (i), and paragraph (j)(1) would be revised, and paragraph (l) would be added to read as follows:

§ 173.185 Lithium batteries and cells.

(a) Except as otherwise provided in this subpart, lithium batteries and cells described in this section are authorized for transportation by highway, rail, vessel and cargo-only aircraft. Rechargeable lithium batteries and cells and devices containing regulated lithium batteries (including lithium batteries contained in equipment) and cells may not be transported except as approved by the Associate Administrator for Hazardous Materials Safety.

\* \* \* \* \*

(g) \* \* \*

(1) In strong inner fiberboard packagings containing not more than 500 g (17.6 ounces) of lithium or lithium alloy per inner packaging.

\* \* \* \* \*

(i) Lithium batteries and cells, rechargeable and devices containing lithium batteries and cells, are not subject to this subchapter if they meet the following requirements:

\* \* \* \* \*

(j) \* \* \*

(1) When new, contained no more than 12.0 g (0.42 ounces) of lithium or lithium alloy per cell;

\* \* \* \* \*

(l) Lithium batteries and cells which do not comply with the provisions of this section may be transported only if they are approved by the Associate Administrator for Hazardous Materials Safety.

§ 173.226 [Amended]

13. In § 173.226, the following changes would be made:

a. In paragraph (b) introductory text, in the first sentence, the wording "In 1A1, 1B1, or 1N1 drums" would be revised to read "In 1A1, 1B1, 1H1, 1N1, or 6HA1 drums".

b. In paragraph (b)(5), the second sentence would be removed.

§ 173.227 [Amended]

14. In § 173.227, the following changes would be made:

a. In paragraph (b)(3)(i)(D), the wording "0.96 mm (0.038 inch)" would be revised to read "0.70 mm (0.027 inch)".

b. In paragraph (b)(4), the period would be removed and replaced with "; and" at the end of the first sentence and the second sentence would be removed.

c. In paragraph (c), in the first sentence, the wording "1H1," would be added immediately following "1B1," and immediately preceding "1N1".

15. In § 173.306, paragraph (h)(3) would be revised to read as follows:

§ 173.306 Limited quantities of compressed gases.

\* \* \* \* \*

(h) \* \* \*

(3) Shipments of ORM-D materials are eligible for the exceptions provided in § 173.156.

\* \* \* \* \*

§ 173.306 [Amended]

16. In addition, in § 173.306, the following changes would be made:

a. In paragraph (a)(3)(i), the wording "50 cubic inches (1 liter)" would be revised to read "one liter (61.0 cubic inches)".

b. In paragraph (b)(1) introductory text, the wording "50 cubic inches capacity (1 liter)" would be revised to read "one liter (61.0 cubic inches)".

17. In § 173.314, in paragraph (c) table, Note 21 would be amended by revising the wording "\$ 173.24(b)" to read "\$ 173.24b", and Note 30 would be revised to read as follows:

§ 173.314 Requirements for compressed gases in tank car tanks.

\* \* \* \* \*

(c) \* \* \*

Notes:

\* \* \* \* \*

30 Tank cars must conform to Class DOT 105S and have an insulation system consisting of 10.16 cm (4 inches) of cork board, or 10.16 cm (4 inches) of polyurethane foam, or 5.08 cm (2 inches) of ceramic fiber placed over 5.08 cm (2 inches) of glass fiber. Tank cars used for chlorine and built after September 30, 1991, must conform to Class DOT 105S and have an insulation system

consisting of 5.08 cm (2 inches) ceramic fiber placed over 5.08 cm (2 inches) of glass fiber.

\* \* \* \* \*

§ 173.323 [Amended]

18. In § 173.323, in paragraph (b)(5), in the last sentence, the wording "the filled drum will not rupture when tested by the method described in CGA Pamphlet C-14 or other equivalent method." would be revised to read "the filled drum is capable of passing, without rupture, the test method described in CGA Pamphlet C-14 or other equivalent method."

PART 174—CARRIAGE BY RAIL

19. The authority citation for part 174 would continue to read as follows:

Authority: 49 U.S.C. App. 1803, 1804, 1808; 49 CFR 1.53(e), 1.53, App. A to part 1.

20. In § 174.81, paragraph (e)(3) would be revised to read as follows:

§ 174.81 Segregation of hazardous materials.

\* \* \* \* \*

(e) \* \* \*

(3) The letter "O" in the Table indicates that these materials may not be loaded, transported, or stored together in the same rail car or storage facility during the course of transportation unless separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials would not occur. Notwithstanding the methods of separation employed, Class 8 (corrosive) liquids may not be loaded above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) materials; except that shippers may load carload shipments of such materials together when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas.

\* \* \* \* \*

§ 174.81 [Amended]

21. In addition, in the Segregation Table in paragraph (d), in the column "8 liquids only", for the entry "Flammable gases", the letter "O" would be removed and in the column "2.1", for the entry "Corrosive liquids", the letter "O" would be removed.

22. In § 174.83, paragraph (b) introductory text would be revised to read as follows:

§ 174.83 Switching placarded rail cars, transport vehicles, freight containers, and bulk packagings.

\* \* \* \* \*

(b) A rail car must not move under its own momentum, strike any other rail car, or couple to another rail car with

more force than necessary to complete coupling, when any rail car is:

\* \* \* \* \*

**PART 177—CARRIAGE BY PUBLIC HIGHWAY**

23. The authority citation for part 177 would continue to read as follows:

Authority: 49 U.S.C. App. 1803, 1804, 1805; 49 CFR part 1.

24. In § 177.848, paragraph (e)(3) would be revised to read as follows:

**§ 177.848 Segregation of hazardous materials.**

\* \* \* \* \*

(e) \* \* \*

(3) The letter "O" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation unless separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials would not occur. Notwithstanding the methods of separation employed, Class 8 (corrosive) liquids may not be loaded above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) materials; except that shippers may load truckload shipments of such materials together when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas.

\* \* \* \* \*

**§ 177.848 [Amended]**

25. In addition, in the Segregation Table in paragraph (d), in the column "8 liquids only", for the entry "Flammable gases", the letter "O" would be removed and in the column "2.1", for the entry "Corrosive liquids", the letter "O" would be removed.

**PART 179—SPECIFICATIONS FOR TANK CARS**

26. The authority citation for part 179 would continue to read as follows:

Authority: 49 App. U.S.C. 1803, 1804, 1805, 1806, 1808; 49 CFR part 1, unless otherwise noted.

27. Section 179.100-7 would be amended by redesignating paragraph (c) as paragraph (d) and adding a new paragraph (c) to read as follows:

**§ 179.100-7 Materials.**

\* \* \* \* \*

(c) *High alloy steel plate.* (1) High alloy steel plate must conform to the following specifications:

Specifications	Minimum tensile strength (p.s.i.) welded condition <sup>1</sup>	Minimum elongation in 2 inches (percent) weld metal (longitudinal)
ASTM A240-70, Type 304L .....	70,000	30
ASTM A240-70, Type 316L .....	70,000	30

<sup>1</sup> Maximum stresses to be used in calculations.

(2)(i) High alloy steels used to fabricate tank must be tested in accordance with the following procedures in ASTM Specification A262-68 titled, "Recommended Practices for Detecting Susceptibility to Intergranular Attack in Stainless Steel," and must exhibit corrosion rates not exceeding the following:

Test procedures	Material	Corrosion rate i.p.m.
Practice B .....	Types 304L and 316L	0.0040
Practice C .....	Type 304L ....	0.0020

(ii) Type 304L and 316L test specimens must be given a sensitizing treatment prior to testing.

\* \* \* \* \*

28. In § 179.100-10, a new paragraph (c) would be added to read as follows:

**§ 179.100-10 Postweld heat treatment.**

\* \* \* \* \*

(c) Tank and welded attachments, fabricated from ASTM A240-70 Type 304L or Type 316L materials do not require postweld heat treatment, but these materials do require a corrosion resistance test as specified in § 179.100-7(c)(2).

Issued in Washington, DC on July 1, 1993, under authority delegated in 49 CFR part 106, appendix A.

Alan I. Roberts,  
Associate Administrator for Hazardous Materials Safety.

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