

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

49 CFR Parts 171, 172, 173, 175, 176, and 178

[Docket Nos. PHMSA-2007-0065 (HM-224D) and PHMSA-2008-0005 (HM-215J)]

RIN 2137-AE31

Hazardous Materials: Revision to Requirements for the Transportation of Batteries and Battery-Powered Devices; and Harmonization with the United Nations Recommendations, International Maritime Dangerous Goods Code, and International Civil Aviation Organization's Technical Instructions.

AGENCY: Pipeline and Hazardous Materials Safety Administration (PHMSA), DOT.

ACTION: Final rule.

SUMMARY: This final rule revises the Hazardous Materials Regulations to maintain alignment with international standards by incorporating various amendments, including changes to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations, and vessel stowage requirements. These revisions are necessary to harmonize the Hazardous Materials Regulations with recent changes to the International Maritime Dangerous Goods Code, the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air, Transport Canada's Transportation of Dangerous Goods Regulations, and the United Nations Recommendations on the Transport of Dangerous Goods.

These revisions also include amendments and clarifications addressing the safe

transportation of batteries and battery-powered devices. Consistent with recent changes to the International Civil Aviation Organization's Technical Instructions, PHMSA is clarifying the prohibition against transporting electrical devices, including batteries and battery-powered devices that are likely to create sparks or generate a dangerous amount of heat. PHMSA is also modifying and enhancing requirements for the packaging and handling of batteries and battery-powered devices, particularly in air commerce, to emphasize the safety precautions that are necessary to prevent incidents during transportation. PHMSA developed these revisions in conjunction with the Federal Aviation Administration to enhance the safe transportation of batteries and battery-powered devices.

DATES: Effective date: [INSERT DATE 30 DAYS AFTER PUBLICATION OF FINAL RULE]

Voluntary Compliance Date: PHMSA is authorizing voluntary compliance beginning January 1, 2009.

Delayed Compliance Date: Except as specified in §§ 171.14, 171.25, 172.102, 172.448, and 178.703 as amended herein, compliance with the amendments adopted in this final rule is required beginning January 1, 2010.

Incorporation by Reference Date: The incorporation by reference of the publications adopted in § 171.7 of this final rule has been approved by the Director of the Federal Register as of [INSERT DATE 30 DAYS AFTER PUBLICATION].

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I. Background

In a notice of proposed rulemaking (NPRM) published July 31, 2008 [73 FR 44804], PHMSA proposed a number of revisions to the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) to incorporate recent updates and revisions to Transport Canada's Transportation of Dangerous Goods (TDG) regulations, the United Nations Recommendations on the Transport of Dangerous Goods (UN Recommendations), the International Maritime Dangerous Goods (IMDG) Code, and the International Civil Aviation Organization Technical Instructions (ICAO TI) for the Transport of Dangerous Goods by Air. The UN Recommendations are amended and updated biennially by the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labeling of Chemicals and serve as the basis for national, regional, and international modal regulations, including the IMDG Code, and the ICAO Technical Instructions. The revisions proposed in the July NPRM cover classification of materials, hazard communication, and packaging requirements.

The most noteworthy proposals in the July NPRM concerned the transportation of batteries and battery-powered devices. Specifically, the NPRM proposed enhanced packaging and hazardous communication requirements consistent with international standards that address the electrical hazards posed by batteries and battery-powered devices. In the NPRM, we proposed the following amendments applicable to the transportation of batteries and battery-powered devices:

- Require reporting of incidents involving batteries and battery-powered devices (devices include equipment) or vehicles.

- Clarify the requirement that batteries, and battery-powered devices and vehicles, be offered for transportation and transported in a manner that prevents short-circuiting, dangerous evolution of heat, damage to terminals, and, in the case of transportation by aircraft, unintentional activation.
- Clarify the requirements for determining whether a battery is considered non-spillable. This included designation of a new section outlining conditions for packaging and transport of batteries determined to be non-spillable.
- Require a certification on the shipping documentation that batteries and battery-powered devices have met the conditions and all requirements for transport as specified in the applicable exception or special provision.
- Eliminate the requirement to disconnect the terminals when a battery-powered wheelchair or mobility aid is transported as checked baggage, provided the wheelchair or mobility aid design provides an effective means of preventing unintentional activation.
- Clarify the requirements for transport of dry batteries including a revision of the proper shipping name used to describe dry batteries.

The measures proposed in the NPRM for batteries and battery-powered devices were intended to harmonize the HMR with applicable international standards. More importantly, the proposals to amend the incident reporting requirements related to the transport of batteries and battery-powered devices would enable the agency to acquire and assess data on the causes of battery incidents in transportation. We could then use that information to develop strategies to reduce the associated risks.

Harmonization of domestic and international standards becomes increasingly

important as the volume of hazardous materials transported in international commerce grows. Harmonization facilitates international trade by minimizing the costs and other burdens of complying with multiple or inconsistent safety requirements for transportation of hazardous materials to and from the United States. By facilitating compliance, harmonization enhances safety for international movements, but only if the international standards themselves provide an appropriate level of safety. To that end, PHMSA actively participates in the development of international standards for the transportation of hazardous materials, frequently advocating the adoption in international standards of particular HMR requirements. When considering the adoption of international standards under the HMR, we review and consider each amendment on its own merit, including an assessment of its overall impact on transportation safety and the economic implications associated with its adoption into the HMR. Our goal is to harmonize without diminishing the level of safety currently provided by the HMR and without imposing undue burdens on the regulated public.

To maintain alignment of the HMR with international requirements, in this final rule, we are incorporating changes based on the Fifteenth revised edition of the UN Recommendations, Amendment 34 to the IMDG Code, and the 2009-2010 ICAO TI, all of which become effective January 1, 2009. We are also addressing petitions for rulemaking concerning harmonization with international standards and additional measures to facilitate international transportation.

The July NPRM incorporated two separate rulemaking dockets – HM-224D addressing battery safety issues and HM-215J addressing more general harmonization issues. The comment period for the proposed rule closed on September 29, 2008. A total

of 33 persons submitted comments in response to the NPRM. Some of the comments we received were provided in duplicate to both Docket Nos. PHMSA-2007-0065 (HM-224D) and PHMSA-2008-0005 (HM-215J). For reader utility, we have listed all comments received in numerical order by the Document ID number assigned when submitted, including those submitted in duplicate to each docket. The following individuals, companies, and organizations submitted comments to the Docket for HM-224D:

- (1) Adrien Tusek (Tusek; PHMSA-2007-0065-0013);
- (2) FedEx Express (FedEx; PHMSA-2007-0065-0016);
- (3) National Air Carrier Association (NACA; PHMSA-2007-0065-0017);
- (4) HMT Associates, LLC (HMT; PHMSA-2007-0065-0018);
- (5) Robert Herman (Paralyzed Veterans of America) (PVA; PHMSA-2007-0065-0020);
- (6) Independent Pilots Association (IPA; PHMSA-2007-0065-0021);
- (7) United Parcel Service (UPS; PHMSA-2007-0065-0019, 0022);
- (8) Arkema, Inc. (Arkema; PHMSA-2007-0065-0023);
- (9) Proctor & Gamble Company (P&G; PHMSA-2007-0065-0024);
- (10) Fedco Electronics, Inc. (Fedco; PHMSA-2007-0065-0025);
- (11) US Fuel Cell Council. (FCC; PHMSA-2007-0065-0026);
- (12) Joseph Schohn (Tyco International) (Tyco; PHMSA-2007-0065-0027, 0034);
- (13) Omni Air International (Omni; PHMSA-2007-0065-0029);
- (14) URS Corporation (URS; PHMSA-2007-0065-0030, 0031);
- (15) Air Line Pilots Association, International (ALPA; PHMSA-2007-0065-0032); and

(16) Dangerous Goods Advisory Council (DGAC; PHMSA-2007-0065-0037).

The following individuals, companies and organizations submitted comments to the Docket for HM-215J:

- (1) Signal Administration, Inc. (Signal; PHMSA-2008-0005-0002);
- (2) Omni Air International (Omni; PHMSA-2008-0005-0003);
- (3) The Fertilizer Institute (TFI; PHMSA-2008-0005-0004);
- (4) FedEx Express (FedEx; PHMSA-2008-0005-0005);
- (5) HMT Associates, LLC (HMT; PHMSA-2008-0005-0006);
- (6) Air Transport Association (ATA; PHMSA-2008-0005-0008);
- (7) National Electrical Manufacturer's Association (NEMA; PHMSA-2008-0005-0009);
- (8) Chemical Products and Technology Division (American Chemistry Council) (CPTD; PHMSA-2008-0005-0010);
- (9) Lilliputian Systems, Inc. (Lilliputian; PHMSA-2008-0005-0011);
- (10) Association of Hazmat Shippers, Inc. (AHS; PHMSA-2008-0005-0012);
- (11) American Trucking Associations (American Trucking Associations) (PHMSA-2008-0005-0013);
- (12) The Council on Safe Transportation of Hazardous Articles, Inc. (COSTHA; PHMSA-2008-0005-0014);
- (13) Battery Council International (BCI; PHMSA-2008-0005-0015);
- (14) Portable Rechargeable Battery Association (PRBA; PHMSA-2008-0005-0017);
- (15) International Vessel Operators Hazardous Materials Association, Inc. (VOHMA;

- PHMSA-2008-0005-0018);
- (16) URS Corporation (URS; PHMSA-2008-0005-0019);
 - (17) Deeds (Industrial Health & Safety Consultants, Inc) (Deeds; PHMSA-2008-0005-0020);
 - (18) Anderson Products, Inc. (API; PHMSA-2008-0005-0021);
 - (19) National Transportation Safety Board (NTSB; PHMSA-2008-0005-0022); and
 - (20) Dangerous Goods Advisory Council (DGAC; PHMSA-2008-0005-0023).

Commenters were supportive of PHMSA's efforts to harmonize the HMR with international standards. Many of the proposals in the NPRM are fully supported by commenters, while others received little or no comment; these amendments are adopted as proposed. Several comments were beyond the scope of this rulemaking and are not addressed in this final rule. Comments are addressed in more detail in the Section-by-Section Review.

II. Overview

A. Amendments to Enhance the Safe Transportation of Batteries and Battery-Powered Devices

The most noteworthy amendments in this final rule address the transportation of batteries and battery-powered devices. Currently, batteries and battery-powered devices are subject to a number of requirements in the HMR. Most importantly, the HMR restrict the transportation of electrical devices, including batteries and battery-powered devices, that are likely to create sparks or generate a dangerous amount of heat that could cause fire, smoke, or otherwise adversely affect the packaging material or means of

conveyance. These batteries and battery-powered devices are forbidden from transportation unless packaged in a manner that prevents such an occurrence (§ 173.21(c)). Additionally, the following types of batteries and devices powered by batteries are subject to packaging and hazard communication requirements:

- Wet (electric storage) batteries (§ 173.159);
- Batteries containing sodium (§ 173.189);
- Lithium cells and batteries (§ 173.185);
- Solid potassium hydroxide batteries (§ 173.213); and
- Battery-powered vehicles and equipment (§ 173.220).

These requirements primarily address the hazards posed by the chemicals contained in the batteries as opposed to the stored electrical energy. For instance, wet cell batteries are required to be packaged in a manner to prevent leakage of the corrosive battery fluid in the event of an accident. The electrical hazard of the battery is addressed through general requirements to prevent short-circuiting, and the general prohibition on transporting electrical devices without proper protection and packaging (§ 173.21).

However, the HMR currently prescribe no separate or unique classification for identifying materials that present a hazard in transport based on their stored electrical energy. This final rule addresses the electrical hazards posed by batteries and battery-powered devices by enhancing packaging and hazard communication requirements.

A growing number of incidents involving batteries and battery-powered devices transported by aircraft have highlighted the transportation safety risks. Additionally, several factors are contributing to a heightened concern for the future transport of these devices, with particular attention to the risk onboard aircraft, including: (1) the

increasing number of batteries and battery-powered portable and handheld devices (e.g., laptops, cellular phones, etc.) carried by airline passengers and otherwise transported in commerce; (2) the development and use of batteries with extended operating life and greater stored energy; and (3) the increasing number of counterfeit batteries in distribution and use. If not adequately protected from damage, short circuiting or, for devices containing batteries, inadvertent activation, batteries and battery-powered devices of all types can create or cause sparks or a dangerous amount of heat for extended periods, and in some cases, cause a fire. Cargo fires are a significant hazard in all modes of transportation and can have particularly catastrophic results in air transportation. If located aboard an aircraft during flight, inadequately protected batteries and battery-powered devices can pose a significant threat to the safety of people, property, and the environment.

PHMSA and the Federal Aviation Administration (FAA) are aware of more than 96 incidents involving batteries or battery-powered devices in air transportation since 1996 that produced smoke, fire or a dangerous amount of heat. These incidents have occurred either on board an aircraft in cargo, checked, or carry-on baggage, or in ground transport facilities associated with air transportation. Many of these incidents involved shipments of batteries as cargo. The remainder involved shipments of electrically powered vehicles, equipment, or apparatus containing batteries. Since most batteries are excepted from the incident reporting requirements in the HMR, it is likely there have been additional incidents in all modes of transportation that were not reported.

One major injury and several minor injuries were reported from these incidents. In some cases, the property damage and business interruption costs resulting from the

incidents were significant. Most incidents occurred or were discovered on the ground in air transport facilities or vehicles. Three incidents occurred in flight on passenger and cargo planes, resulting in emergency landings or flight plan diversions.

In response to these incidents, PHMSA's predecessor agency (the Research and Special Programs Administration) issued a public advisory on July 7, 1999 (64 FR 36743), reminding the transportation industry and public that batteries and electric devices that contain batteries are forbidden for transport unless properly packaged to prevent the creation of sparks or generation of a dangerous amount of heat (§ 173.21). The FAA issued safety advisories to the airline industry on July 2, 1999, and again on May 23, 2002.

In addition, due to a series of incidents involving batteries carried by airline passengers, PHMSA initiated a campaign to educate the public about ways to reduce the risks posed in the transportation of batteries and battery-powered devices. The campaign included establishing a dedicated webpage for air travelers and developing a battery safety guide that includes safety measures and tips for the general public, for distribution at airports, in retail outlets, and through electronic media. As part of our battery safety campaign, we recommended various practical measures for complying with the regulations and reducing transportation risks. Recommended practices include keeping batteries installed in electronic devices; packing spare batteries individually in carry-on baggage; keeping spare batteries in their original retail packaging; separating batteries from other metallic objects, such as keys, coins and jewelry; securely packing battery-powered devices in a manner to prevent accidental activation; and ensuring batteries are undamaged and purchased from reputable sources. On March 26, 2007, PHMSA issued a

safety advisory notice (72 FR 14167) to further inform the traveling public and airline employees about the importance of properly packing and handling batteries and battery-powered devices when they are carried on board an aircraft.

We have also initiated a comprehensive strategy aimed at reducing the risks posed by batteries and battery-powered devices in transportation. On February 22, 2007; April 26, 2007; May 24-25 2007; and April 11, 2008, PHMSA hosted meetings with public and private sector stakeholders who share our concern for the safe transportation of batteries and battery-powered devices. The meetings provided an opportunity for representatives of the National Transportation Safety Board (NTSB), the Consumer Product Safety Commission, manufacturers of batteries and battery-powered devices, airlines, airline employee organizations, testing laboratories, and the emergency response and law enforcement communities to share and disseminate information about battery-related risks and developments. Understanding these risks is essential to promote improvements in industry standards and best practices. Together we identified a series of immediate and longer-term actions that participants are taking or will take to enhance safety, including:

- Comprehensive reporting and investigation of battery-related incidents;
- Improved battery, consumer product, and software design;
- Development and implementation of a technical standards agenda;
- Consideration and implementation of improved regulatory standards;
- Focused enforcement; and
- Development and implementation of a public outreach and education campaign.

The requirements adopted in this final rule are an important element of the safety strategy designed to address specific battery-related hazards not adequately addressed by existing HMR requirements.

In this final rule, we are adopting the following amendments to enhance the safe transportation of batteries and battery-powered devices:

- Requirement to report incidents involving batteries and battery-powered devices including those that result in a fire, violent rupture, explosion, or dangerous evolution of heat. Immediate notice requirements are limited to air transport of batteries and battery-powered devices.
- Clarification of the requirement that batteries and battery-powered devices and vehicles be offered for transportation and transported in a manner that prevents short-circuiting, the potential of a dangerous evolution of heat, damage to terminals, and, in the case of transportation by aircraft, unintentional activation.
- Clarification of the requirements for determining whether a battery is considered non-spillable. This clarification includes the designation of a new section outlining conditions for packaging and transport of batteries determined to be non-spillable.
- Requirement for a shipper of batteries dry, sealed to indicate compliance with applicable special provisions and exceptions by marking each package with the words “not restricted” or, if a transport document such as an air waybill accompanies a shipment, by including the words “not restricted” on the document.

- Elimination of the requirement to disconnect the terminals when a battery-powered wheelchair or mobility aid is transported as checked baggage, provided the wheelchair or mobility aid design provides an effective means of preventing unintentional activation.
- Clarification of the requirements for the transport of dry batteries including a revision of the proper shipping name used to describe dry batteries and a provision to limit the applicability of transport requirements to a certain size of battery.

As indicated earlier, these amendments will harmonize the HMR with international standards applicable to the transportation of batteries and battery-powered devices, improve communication of the standards pertaining to the transport of batteries and battery-powered devices to facilitate safe transport of these materials especially by aircraft, relieve burdens associated with compliance requirements, and provide data and information to enable PHMSA to develop an understanding of the causes of battery incidents in transportation and assist us in the reduction of the associated risks.

Incident reporting. Most batteries are currently excepted from the incident reporting requirements in the HMR. We believe it is likely that numerous incidents involving batteries and battery-powered devices in all modes of transportation are not reported. This under-reporting has made it difficult to analyze the full body of incidents in transportation and to assess the full extent of the hazards associated with transporting batteries and battery-powered devices. In the July NPRM, we proposed to require immediate (telephonic) notice in accordance with § 171.15 for all incidents involving

shipments of batteries or battery-powered devices that result in a fire, violent rupture, explosion, or a dangerous evolution of heat. In addition, we proposed to require submission of a written incident report in accordance with § 171.16 for battery related incidents, including incidents involving battery shipments that are prepared and offered as excepted from HMR requirements.

We received a number of comments [ALPA, American Trucking Associations, COSTHA, NEMA, UPS, and VOHMA] supporting the proposal to require written reports in accordance with § 171.16 of the HMR for incidents involving shipments of batteries or battery-powered devices that result in a fire, violent rupture, explosion, or a dangerous evolution of heat. We also received a number of comments [ALPA, COSTHA, NEMA, VOHMA] supporting the proposal to require immediate (telephonic) notice in accordance with § 171.15. However, three commenters [American Trucking Associations, DGAC, UPS] oppose our proposal to require immediate notice of incidents involving shipments of batteries and battery-powered devices as unwarranted and burdensome, especially on carriers. DGAC does not believe, "...a battery incident would warrant [an emergency response] and therefore consider[s] reporting of battery incidents to the NRC an unnecessary reporting burden." Additionally, commenters note it would be difficult to determine whether batteries or battery-powered devices were involved and whether they were the cause of the incident within the time constraints of immediate reporting requirements. As indicated by the American Trucking Associations, experience has shown that for trailer fires "...it is very difficult to determine the cause of the fire and carriers may not even know that batteries were present until after the fire is extinguished." UPS indicates "...the new language will create significant challenges for

carriers.” UPS also notes that “[e]xperience demonstrates that there are occasions when fires occur but the cause cannot be determined” and “many hours or even days may be required to identify that the batteries were in the trailer.” Both commenters express concern that fire fighters may shift or remove contents, thus complicating efforts to determine the cause of a fire. The American Trucking Associations and VOHMA specifically recommend that immediate notice should apply to air transportation only.

Given the recent incidents involving batteries and battery-powered devices, we believe incident reporting will provide the data to enable us to identify the causes of battery incidents and determine whether additional measures would improve safe transport and help prevent future incidents. However, we agree with the commenters that immediate telephonic reporting of incidents that occur during ground transportation may not be necessary for this purpose. A written report of the incident submitted in accordance with § 171.16 should provide sufficient information for us to identify and assess incident causes without imposing an undue burden on carriers. Since most of the anecdotal information about battery incidents is associated with aircraft incidents and because of the inherent safety hazards of air transport, we continue to believe that air carriers should be required to provide immediate notice of battery related incidents. Therefore, in this final rule, we are adopting the amendment to § 171.15 to include a requirement for immediate notice of incidents involving shipments of batteries or battery-powered devices transported by aircraft resulting in a fire, violent rupture, explosion, or dangerous evolution of heat. Because this change from the incident reporting provisions proposed in the NPRM will revise the estimated reporting burden, we are re-calculating the information collection pertaining to incident reporting and will submit a revised

package to the Office of Management and Budget (OMB). A separate Federal Register notice will be published pending OMB review (see discussion under “Paperwork Reduction Act”).

One of the reporting criteria proposed in the NPRM was for an incident involving a “dangerous evolution of heat.” Several commenters [American Trucking Associations, COSTHA, FedEx, UPS, VOHMA] express concern that the criterion is vague and open to interpretation. The commenters request that we clarify the meaning of a “dangerous evolution of heat” or remove the condition altogether in order to relieve any potential ambiguity from the incident reporting requirements for the shipment of batteries or battery-powered devices. As FedEx states, “this [term] is subjective and certainly requires further review or additional clarification.” We continue to believe that a requirement to report incidents involving a “dangerous evolution of heat” will assist us to evaluate the potential fire risks associated with the transportation of batteries and battery-powered devices. However, we agree that clarification would be helpful. VOHMA suggests that the reporting requirement should be triggered by visible evidence of an amount of heat sufficient to be dangerous to packaging or personal safety to include “...charring of packaging, melting of packaging, scorching of packaging, or other evidence.” We agree and are adding this clarification to the reporting requirements.

Battery safety. In this final rule, we are adopting a number of revisions to clarify that batteries of all types and battery-powered devices, equipment, and vehicles must be packaged for transportation in a manner that prevents short-circuiting, damage to terminals, the potential of a dangerous evolution of heat, and, for transportation by aircraft, unintentional activation. We are including several examples of packaging

methods that may meet this performance standard, including packaging each battery or each battery-powered device in fully enclosed inner packagings made of non-conductive material, and separating batteries and battery-powered devices in a manner to prevent contact with other batteries, devices or conductive materials (e.g., metal) in the packagings. Batteries designed with exposed terminals or connectors should have the exposed terminals or connectors protected with non-conductive caps. We have included language in §§ 171.15, 171.16, 172.102 Special Provision 130, 173.21, 173.159, 173.220, and 175.10 to further clarify these requirements.

The HMR include a number of provisions applicable to batteries installed in vehicles, machinery, or other types of equipment. Section 173.220 establishes transportation requirements for internal combustion engines, self-propelled vehicles, mechanical equipment containing internal combustion engines, and battery powered vehicles or equipment. Generally, this section excepts battery-powered vehicles, machinery, and equipment from the HMR, provided they meet certain minimal requirements. We are aware of several incidents resulting in a dangerous evolution of heat initiated by batteries of this design which have been inadequately protected. In this final rule, we are adopting an amendment to require battery-powered vehicles, machinery, and equipment, including battery-powered wheelchairs and mobility aids, to conform to the new requirements in § 173.159, paragraphs (a) and (b), including requirements for protecting terminals and preventing short-circuiting and unintentional activation. In addition, we are clarifying that battery-powered vehicles, machinery, and equipment are forbidden to be transported unless packaged in a manner preventing the creation of sparks, a dangerous amount of heat and, in air transportation, unintentional

activation.

Non-spillable batteries. Section 173.159 establishes requirements for the transportation of wet batteries, including non-spillable batteries. If certain conditions are met, non-spillable batteries are excepted from the HMR. Non-spillable batteries meeting additional requirements are excepted from all other requirements of the HMR. Unless all of the conditions specified in § 173.159(d) are met, a non-spillable battery is fully subject to the HMR as a wet electric storage battery. International regulations outline the conditions under which a battery is considered non-spillable and provide packaging requirements specific to non-spillable batteries. In this final rule, we are describing in § 173.159(f) the conditions under which a battery is considered non-spillable and relocating the exceptions pertaining to non-spillable batteries to a new § 173.159a. Consistent with international requirements, we are specifying that batteries are considered “non-spillable” when they are capable of passing a vibration test and a pressure differential test without leakage. We are also adopting the requirement that non-spillable batteries must be packaged in strong outer packaging and securely fastened in the battery holder or the equipment when the battery is an integral part of the operation of mechanical or electronic equipment. In addition, we are specifying that, except for the incident reporting requirements of §§ 171.15 and 171.16, non-spillable batteries are not subject to the requirements of the HMR if they meet the following additional conditions:

- At a temperature of 55 °C (131 °F), the battery does not contain any unabsorbed free-flowing liquid, and is designed so that electrolyte will not flow from a ruptured or cracked case;

- The battery is protected against short-circuiting and securely packaged in strong outer packaging;
- The battery is marked “NONSPILLABLE” or “NONSPILLABLE BATTERY”;
- and
- For transportation by aircraft:
 - The battery must meet the provisions of § 173.159(b)(2).

One commenter [Tyco] expresses concern regarding shipments of non-spillable batteries that otherwise appear to meet the requirements for transport of non-spillable batteries (see § 173.159a), but leak after being damaged during transportation. The commenter states that it conducted an internal investigation, which involved test samples of all non-spillable batteries it utilizes, to determine if those batteries met the criteria of a “non-spillable” battery because they leaked and contained free liquids. According to the commenter, a number of the tested batteries exhibited observable leakage, although the manufacturers and distributors of the batteries had provided certification and laboratory results showing no failures. Based on this information, the commenter recommends that PHMSA clarify any ambiguity surrounding the methodology used to determine whether a battery is “non-spillable” to improve safety during the transportation of these materials. Specifically, the commenter requests PHMSA identify a testing protocol to determine whether a battery is designed so that electrolyte will not flow from a ruptured or cracked case.

We commend the efforts of the commenter and appreciate the information provided in its comments. However, the recommendation provided by the commenter is outside the scope of this rulemaking as revisions to the criteria for determination of a

non-spillable battery were not proposed in the NPRM. We will consider this information as part of our comprehensive strategy aimed at reducing the risks posed by batteries and battery-powered devices in transportation.

We received two comments [BCI, PRBA] expressing disappointment that PHMSA did not consider provisions for shipments of non-spillable batteries transported for recycling or disposal. The commenters indicate that "...it is almost impossible for shippers of used batteries to know if nonspillable batteries have been subject to the required vibration, pressure differential, and 'crack test' at 55 °C (131 °F) or marked NONSPILLABLE or NONSPILLABLE BATTERY..." Both commenters request that PHMSA include a new paragraph in § 173.159 which would provide relief from these tests for batteries transported for disposal or recycling. The request by the commenters is beyond the scope of this rulemaking. We did not propose the addition of a new paragraph which provides relief from non-spillable test requirements for shipments of non-spillable batteries intended for recycling or disposal. However, we will review the merits of this request and consider it for a future rulemaking.

One commenter [BCI] requests that PHMSA remove the reference to "batteries manufactured after September 30, 1995" in the new § 173.159a for exceptions for non-spillable batteries. BCI notes that "...it is safe to assume that all nonspillable batteries being shipped today and in the future are manufactured after this date..." We agree and in this final rule, we are removing the phrase "batteries manufactured after September 30, 1995" from the new § 173.159a.

Battery-powered wheelchairs or other mobility aids. Section 175.10 establishes exceptions for passengers, crewmembers, and air operators. Currently, the HMR permit a

wheelchair or other battery-powered mobility aid to be carried on board a passenger aircraft as checked baggage provided that (1) visual inspection, including removal of the battery if necessary, reveals no obvious defects; (2) the battery is disconnected and terminals are insulated to prevent short-circuiting; and (3) the battery is securely attached to the wheelchair or mobility aid or removed and separately packaged. We are concerned, however, that repeated handling of the battery in a wheelchair or other mobility aid could result in damage or other problems that could compromise safety. Moreover, the design batteries and their housing have significantly improved in recent years. Therefore, in the NPRM, we proposed to revise § 175.10(a)(15) to eliminate the requirement to disconnect the terminals when a battery-powered wheelchair or other mobility aid is transported as checked baggage provided the device provides an effective means of preventing unintentional activation. Battery terminals must continue to be protected from short-circuiting, but such protection is inherent in the design of most wheelchairs and mobility aids.

Three commenters [ALPA, Omni, PVA] support PHMSA's proposal to eliminate the current requirement to disconnect the terminals when a battery-powered wheelchair or other mobility aid is transported as checked baggage provided the wheelchair or mobility aid has an effective means of preventing unintentional activation. ALPA states, "...[w]e believe this provides an equivalent level of safety and will prevent inadvertent damage to wheelchairs by airline personnel, which could lead to a battery incident." However, one commenter [Tusek] expresses concern regarding the proposal to disconnect the battery if the wheelchair or mobility aid design does not provide an effective means of preventing unintentional activation. The commenter is concerned that

such a requirement can be satisfied by merely unplugging a cable from a control unit rather than disconnecting the battery at the terminal(s). The commenter notes that the cable is still “live” and susceptible to “arcing” (short-circuiting) if the cable remains attached to the battery. The commenter provides information about an incident involving a wheelchair to illustrate the risk associated with unplugging a wheelchair but allowing the cable or wiring to remain connected to a battery.

We acknowledge the concerns of the commenter and believe that additional clarification is warranted. Our review indicates that the referenced incident could have been prevented by thorough visual inspection, proper handling, and proper insulation of the terminals. Additionally, we note that the intent of the provision to disconnect the battery is to disconnect the battery at the terminals (and insulate the terminals to prevent short circuits). Unplugging a cable and leaving it connected to the terminal(s) does not satisfy the requirement to disconnect the battery and insulate the terminals. However, requiring the disconnection of batteries at the terminal results in repeated handling of the battery and increases the potential of damage or other problems that could compromise safety. Our intent is to diminish this potential by allowing the battery to remain connected to the wheelchair or mobility aid if the design provides an effective means of preventing unintentional activation. Therefore, in this final rule, we are adopting the requirements as proposed, and including additional language in the regulatory text in § 175.10(a)(15) to clarify that when the battery is disconnected, the battery terminals must also be protected to prevent short circuits.

In addition, for consistency with Special Provision 130 and further clarification, we are also revising paragraph (a)(17) to § 175.10 to clarify that batteries dry, sealed, not

exceeding 9-volts, are not subject to the requirements of the HMR, except incident reporting, when carried by aircraft passengers or crewmembers. This amendment will enhance safety while providing improved accommodation for passengers traveling with wheelchairs or mobility aids or dry batteries not exceeding 9-volts and is consistent with corresponding provisions in the ICAO TI. This amendment is being adopted as proposed.

Waybill notation. In the July NPRM, we proposed to require a notation to be included on the air waybill accompanying a shipment to indicate that batteries and battery-powered devices have met all conditions and requirements for transport as specified in the HMR without further restriction. A number of commenters [ALPA, American Trucking Associations, BCI, COSTHA, DGAC, Fedco, FedEx, NEMA, Omni, PRBA, UPS, URS] addressed the proposed notation. Most commenters oppose the proposal based on current air carrier practice, inconsistency with the ICAO TI, and concern that air waybills are not required shipping documents under the HMR.

Commenters oppose the certification provisions because the HMR do not specifically require an air waybill. As COSTHA notes, "...[u]se of an air waybill is not mandated by the HMR and there are few if any references to an air waybill." Additionally, UPS points out that "[t]his commercial document, used by many air carriers as a contract of carriage, does not really have any status in the HMR..." Commenters state that the language as written suggests that the required words "not restricted" must appear on an air waybill, in effect, requiring shipments to be accompanied by an air waybill. Other commenters stress that the language as proposed in the NPRM is not consistent with ICAO TI requirements, which require the words "not restricted" when an

air waybill is issued. PRBA asserts that “...PHMSA should clarify that this requirement only applies when an air waybill is issued...” Two commenters [COSTHA, Omni] suggest that it would be more appropriate to revise the language to require confirmation of compliance on an accompanying air waybill or other document. COSTHA specifically suggests using language similar to language provided in new section § 173.4a(h)(1), “...if a document such as an air waybill accompanies a shipment...”

Commenters are also concerned about implementation of such a hazard communication requirement. Some indicate an inequitable burden on carriers, especially non-air transport modal carriers. The American Trucking Associations indicates, “...if a shipper of batteries fails to indicate this statement on an air waybill used as a shipping paper, it is extremely unlikely that a motor carrier will be able to identify the deficiency...” UPS urges PHMSA to proceed carefully with new documentation requirements and states, “PHMSA should not expect carrier personnel routinely to seek information related to hazardous materials on a document other than a hazardous materials shipping paper, particularly when the package does not otherwise require special handling...” Commenters also note that use of an air waybill is not standard across the air carrier industry, and that carriers and industry are becoming more automated and moving towards a paperless system for shipments. According to UPS, “Millions of air shipments, including those in the UPS small package service, move every day without an accompanying air waybill. The vast majority of such small package service shipments are transported with an address label affixed to the package...PHMSA’s proposal depends on the unfounded assumption that an air waybill

will be generated for every air shipment...” FedEx adds, “We estimate that well over 50% of shipments offered to FedEx Express do not have a paper air waybill.”

Two commenters [NACA, Omni] note that in many cases the carrier or freight forwarder prepares the air waybill and disagree with PHMSA’s premise that including the words “not restricted” on an air waybill allows a carrier or freight forwarder to verify that the shipper has complied with applicable requirements. According to Omni, “...[w]here the consignor tenders a material or article to an aircraft operator or freight forwarder and the operator’s or freight forwarder’s agent prepares the air waybill, the stated intent of the PHMSA may not be satisfied.” Omni suggests PHMSA require the confirmation of compliance on the accompanying air waybill or other transport document to permit the endorsement in a form other than the air waybill prepared by the operator or freight forwarder. NACA suggests requiring the shipper to submit written verification that the shipment is determined to be “not restricted” or requiring the shipper endorsement of an air waybill prepared by a carrier or the freight forwarder.

Recent incidents involving batteries and battery-powered devices suggest that shippers may not be aware of all the HMR requirements applicable to shipments of these items. Moreover, the lack of a declaration or some other type of shipment identification accompanying these shipments to air carriers may result in unsafe handling during transportation. We believe that a requirement to indicate on a shipping document or other media that the shipment conforms to all applicable requirements will enhance safety through increased awareness on the part of both shippers and carriers.

It was not our intent to specifically require the use of an air waybill to communicate conformance. We agree with commenters that recommend consistency

with ICAO TI requirements to include the words “not restricted” when an air waybill is issued. However, in light of comments submitted indicating that not all shipments are accompanied by an air waybill, limiting the requirement to “when an air waybill is issued” does not satisfy the intent of communicating conformance with the HMR. Therefore, as suggested by COSTHA, we are revising the language to be similar to the “excepted quantities” documentation requirements to specify that “if a document such as an air waybill accompanies a shipment, the words “not restricted” must be provided on the document.” The documentation we refer to is some form of transport documentation prepared to accompany the shipment. To assist the communication process, we recommend including the words “not restricted” on the top page of a multiple page document in a manner clearly distinguishing the required words from other text. In addition, to reduce the paperwork burden that may result from this requirement, in this final rule, we are adopting an alternative means of communicating conformance. Specifically, a shipper may elect to mark each package containing batteries or battery-powered devices with the words “not restricted” in lieu of placing the words on a transport document accompanying the shipment. Finally, in response to commenters’ concerns that this amendment will impose additional documentation-related burdens, we are recalculating the related information collection pertaining to shipping papers and will submit a revised package to OMB. A separate Federal Register notice will be published pending OMB review (See discussion under “Paperwork Reduction Act”).

Note that the requirement to include the notation “not restricted” on an air waybill, shipping document, or as a package marking applies to cargo shipments of dry, sealed batteries that are greater than 9 volts. Other types of batteries, including lithium

batteries and non-spillable batteries, are already subject to hazard communication requirements in the form of shipping documentation and/or package markings and labels.

We are not adopting our proposal for an air waybill certification requirement for other types of hazardous materials shipments. See the discussion later in this preamble.

Conforming amendments. In the July NPRM, we proposed a number of conforming amendments to ensure that batteries are transported in accordance with the proposed requirements in § 173.159. For example, § 173.21 currently prohibits the transportation of electrical devices unless packaged to prevent the creation of sparks or generation of a dangerous amount of heat. In the NPRM, we proposed to revise this paragraph to clarify that the term “electrical devices” includes “batteries” and “battery-powered devices.” We also proposed to revise Special Provision 130 to specify that “Batteries, dry, sealed, n.o.s.” are not subject to the requirements of the HMR except those pertaining to incident reporting, short circuit protection, damage to terminals, prevention of the potential of a dangerous evolution of heat, and when transported by aircraft, unintentional activation and an indication on the air waybill that all conditions for transport have been met (Special Provision 130). In addition to the proposed amendments, in this final rule, we are adding clarifying language that the requirements in Special Provision 130 for dry batteries transported by air only apply to shipments of batteries whose voltage (electrical potential) exceeds 9 volts.

We received a number of comments [BCI, NEMA, Omni, PRBA, UPS, URS] generally supporting our efforts to clarify requirements for preventing short circuits and inadvertent activation as well as our proposal to include examples of packaging methods to meet performance standards. However, several commenters [NEMA, PRBA, URS]

oppose the current structure of the regulatory text outlining examples of packaging methods to prevent short circuits for batteries excepted under § 172.102, Special Provision 130. Specifically, commenters are concerned with the examples we provided to package each battery when practicable in fully enclosed inner packagings or separating the batteries in a manner to prevent contact with other batteries, devices or conductive materials. The commenters are also concerned that this language would disallow the current practice of retail packaging commonly referred to as “blister packs” and volume packaging of batteries. Commenters note that during volume packaging of batteries, batteries are packaged in such a manner that the metal sides or jackets of the batteries contact one another, but are positioned and packaged so that there is no terminal-to-terminal contact or terminal-to-metal contact, and there is no shifting of the contents to allow such contact.

We agree with the commenters that clarification of the proposed language may be warranted. The intent of including the examples of methods to protect from short circuits is to assist shippers to identify specific methods of achieving the standard. As UPS notes “[t]he inclusion of these examples will lead to better understanding of the specific steps required to prevent incidents in transportation.” Our intent is not to prohibit a method of packaging that has a track record of safe transport. Indeed, we have issued previous interpretive guidance indicating that battery-to-battery contact is not prohibited provided there is no contact between battery terminals, battery terminals and conductive material, or shifting that would allow such contact. Therefore, in this final rule, we are revising the proposed language in §§ 172.102, Special Provision 130 and 173.159 to clarify the requirements.

One commenter [Omni] expresses concern that FAA requirements in 14 CFR Part 382 no longer align with the requirements in Parts 171 through 175 because of proposed revisions to §§ 173.159 and 175.10. Omni encourage agencies within DOT to coordinate efforts to ensure requirements from the respective agencies align. We agree that alignment within the agencies is necessary; however, we are not aware of any conflict.

One commenter [BCI] indicates that we did not clearly state the numerous ways protection against short circuits and generating a dangerous quantity of heat can be achieved. BCI points out that “...certain batteries are designed in such a way to prevent short circuits, and thus need not be subject to additional packaging requirements. (Examples include, but are not limited to, recessed battery terminals)...” BCI recommends that PHMSA incorporate design considerations into the transport requirements for batteries or battery-powered devices. We agree. The requirements are not intended to regulate the design of these materials but allow for designs that conform to the requirements. For instance, the requirements allow for compliance with the requirement to protect against damage to terminals through design implementation such as recessed battery terminals.

In the July NPRM, we also proposed to amend certain entries in the Hazardous Materials Table (HMT) in § 172.101. Currently, under the HMR, dry batteries are not subject to incident reporting or measures to prevent unintentional activation until a dangerous amount of heat has developed. As indicated above, in this final rule, we are extending the requirements for incident reporting and enhanced packaging to cover all batteries and battery-powered devices. Therefore, we are removing the entry “Batteries, dry, not subject to the requirements of this subchapter” and adding a new entry,

“Batteries, dry, sealed, n.o.s.” to the HMT.

It should be noted that shippers must distinguish between the proper shipping name “Batteries, dry, sealed, n.o.s.” and the existing proper shipping name “Batteries, wet, non-spillable, electric storage.” Batteries described as “Batteries, wet, non-spillable, electric storage” have metallic lead and lead oxide electrodes and sulfuric acid electrolytes just like regular “wet” batteries, but the acid is either gelled with silica or absorbed in a mat of micro- glass fibers. These batteries are not truly “sealed” (non-spillable) but are “valve regulated” (they are technically termed “valve-regulated lead-acid” or “VRLA”). The resealable valves prevent the entrance of oxygen from the outside air, but release excess hydrogen and oxygen formed during overcharging. These types of batteries are generally used for 12-volt vehicular starting applications and uninterruptible power supply applications.

Batteries described under the new proper shipping name “Batteries, dry, sealed, n.o.s.” are hermetically sealed and generally utilize other metals and/or carbon as electrodes. These batteries are typically used for portable power applications. The rechargeable (and some nonrechargeable) types have gelled alkaline electrolytes (rather than acidic) making it difficult for them to generate hydrogen or oxygen when overcharged.

The entry “Batteries, dry, containing potassium hydroxide solid, electric storage” is being revised by adding to column (7) a reference to new Special Provision 237. The new special provision specifies that “Batteries, dry, containing potassium hydroxide solid, electric storage” must be prepared and packaged in accordance with the requirements of § 173.159(a), (b), and (c), and for transportation by aircraft,

§ 173.159(b)(2). The entry “Batteries, wet, non-spillable, electric storage” is revised by adding to column (8A), a reference to new § 173.159a.

Section 173.189 establishes transportation requirements for batteries containing sodium or cells containing sodium. In the NPRM, we proposed to revise paragraph (e) to specify that vehicles, machinery and equipment powered by sodium batteries must be consigned under the entry “Battery-powered vehicle or Battery-powered equipment.” This amendment is being adopted as proposed.

Section 176.84 contains additional stowage and segregation requirements for hazardous materials on cargo and passenger vessels. In this final rule, in order to align the HMR with the IMDG Code, a new vessel stowage code “146” is added to the § 176.84(b) table to specify that, “Category B stowage applies for unit loads in open cargo transport units.” The new vessel stowage code “146” is assigned to “Batteries, wet, filled with acid, electric storage,” UN2794 and “Batteries, wet, filled with alkali, electric storage,” UN2795 in column (10B) of the HMT.

Lithium batteries. Except for incident reporting requirements, the July NPRM did not propose any amendments pertaining to the transportation of lithium batteries. PHMSA is continuing to evaluate and reduce lithium battery risks through targeted enforcement; inspections and testing, including root cause investigation of all incidents; public outreach; and other non-regulatory initiatives.

Three commenters [ALPA, Fedco, Omni] express disappointment that PHMSA is not proposing any amendments pertaining to the transportation of lithium batteries. One commenter [Fedco] is, “appalled to find....Amendments to the HMR pertaining to lithium batteries based on the Fifteenth revised edition of the UN Recommendations are

not being proposed in this rulemaking.” Fedco notes the burden this places on its company by requiring “extreme diligence” when shipping lithium cells and batteries because of the dual shipping and packaging requirements and strongly urges PHMSA to fully harmonize with the UN Recommendations. Omni also expresses concern but requests that, “...at a minimum, the PHMSA incorporate in to § 172.101 the three new lithium ion battery proper shipping names and the three replacement lithium metal battery proper shipping names that come into effect internationally....” as of January 1, 2009. An additional commenter [NEMA] requests clarification of the weight limitations for packages of small lithium cell and batteries.

We appreciate the concerns expressed by shippers about the challenges involved with complying with differing regulatory standards and requirements. However, it should be noted that because the HMR permit compliance with ICAO requirements for air shipments, the new proper shipping names may be used for air transportation, both domestically and internationally, and for transportation by motor vehicle and rail immediately before or after being transported by aircraft. Further, as stated in the NPRM, we plan to complete an assessment of the costs and benefits of further restrictions and available alternatives before developing additional lithium battery rulemaking proposals. Therefore, except for incident reporting requirements and some clarifying language for protection against short circuits, this final rule does not adopt amendments pertaining to the transportation of lithium batteries. In the meantime, we will continue to monitor and evaluate the safety performance of lithium batteries in transportation, identify and target counterfeit and other non-conforming batteries, and encourage the development and introduction of safer battery designs.

B. Additional Amendments Adopted in this Final Rule

In addition to the battery-related amendments detailed above, in this final rule, we are adopting the following amendments to harmonize the HMR with the most recent revisions to the UN Recommendations, ICAO TI, and IMDG Code:

- Hazardous Materials Table (HMT): Amendments to the § 172.101 HMT to add, revise, or remove certain proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, bulk packaging requirements, passenger and cargo aircraft maximum quantity limitations and vessels stowage provisions. Additionally, we are revising several entries in the HMT to correct typographical errors.
- Fuel Cells: Amendments to the HMT to add four new proper shipping names to describe the range of fuel used in fuel cell cartridges: (1) corrosive substances (UN3477); (2) liquefied flammable gas (UN3478); (3) hydrogen in metal hydride (UN3479); and (4) water-reactive substances (UN3476). In addition, we are adopting amendments to expand the types of fuel cell cartridges permitted in carry-on baggage to include water-reactive substances and hydrogen in a metal hydride. Amendments to § 173.230 provide packaging requirements for fuel cells and, except for transportation by aircraft, limited quantity exceptions for the various types of fuel cell cartridges specified above.
- Small Quantity Exceptions: Amendments maintaining current allowances for small quantities of Division 2.2, Class 3, Division 4.1, Division 4.2 (PG II and III), Division 4.3 (PG II and III), Division 5.1, Division 5.2, Division 6.1, Class 7,

Class 8, and Class 9 materials transported by highway and rail and adopting the UN and ICAO excepted quantity provisions for transportation by aircraft or vessel.

- Incident Reporting: Amendments to provisions that except certain hazardous materials or commodities from the requirements of the HMR, including incident reporting requirements. The HMR contain overriding provisions in §§ 171.15 and 171.16 requiring notice of specific types of incidents to the National Response Center (NRC) and submission of a Hazardous Materials Incident Report, DOT Form F 5800.1, when in possession of a hazardous material at the time of an incident. The NRC relies on notices to gather and distribute spill data to emergency responders, and the DOT hazardous materials transportation safety program relies on DOT Form F 5800.1 to gather basic information on incidents that occur during transportation. We proposed to amend several provisions to emphasize the need to provide notice to the NRC and to address the need to obtain more accurate and complete data on incidents. Based on our review of comments regarding the proposed air waybill requirements for “not restricted” materials and based on past history of safe transportation of these excepted materials, in this final rule, we are not adopting the incident reporting requirement as proposed for those materials excepted in §§ 173.162, 173.164, 173.166, 173.186, 173.306, and 173.307. However, we are adopting our proposals to revise the exceptions and Special provisions applicable to batteries to include incident reporting requirements because there is a greater need to collect data as is discussed in the above Section A. We will continue to review the merits of the

- proposal and may reconsider the proposed amendments for a future rulemaking.
- Organic Peroxide Tables: Amendments to the Organic Peroxide Tables to add, revise, or remove certain hazardous materials and provisions.
 - Incorporation by Reference: Amendments to incorporate by reference the updated ICAO TI, IMDG Code, TDG, UN Recommendations, and the addition of two new International Organization for Standardization (ISO) standards.
 - Petitions for Rulemaking: In this final rule, we are addressing several petitions for rulemaking: P-1490, requesting PHMSA to remove the requirement that the type of package must be included on the notification of pilot-in-command; P-1494, requesting PHMSA to specify that pictograms described in the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS) are not prohibited under the HMR; P-1505, requesting PHMSA to include a new proper shipping name “Powder, smokeless,” UN0509, to the HMT and to include the new entry among the explosives assigned Packaging Instruction 114(b) in § 173.62; and P-1516, requesting PHMSA to allow the marine pollutant list to remain the basis in domestic transportation for regulating substances hazardous to the environment while permitting substances meeting the new IMDG Code criteria to be transported as substances hazardous to the environment. We are also addressing petitions P-1517 and P-1518, requesting PHMSA to align provisions for the transport of fuel cell systems and cartridges in the HMR with international standards.
 - Requirements for Marine Pollutants: Recently, the classification criteria for marine pollutants in the IMDG Code were amended for consistency with the

aquatic toxicity criteria adopted within the GHS. The HMR currently allow materials meeting the criteria of a marine pollutant under the prior IMDG Code criteria to be classed as such for domestic or international transportation (see paragraph 4 of the introduction to Appendix B of § 172.101). The new classification system adopted in the IMDG Code is complicated, and the associated criteria for classifying mixtures containing marine pollutants would involve an additional layer of complexity without a corresponding public benefit. Therefore, in the NPRM, we did not propose to adopt the new IMDG Code environmental classification system. Instead, we proposed to maintain the current regulatory approach to facilitate transportation without mandating use of the new GHS-based criteria. We also proposed to adopt a new marking for marine pollutants consistent with the marking adopted within the IMDG Code. These amendments are being adopted as proposed. These actions will provide the greatest possible harmonization with international requirements without imposing an undue burden on industry. This amendment is also consistent with a Petition for Rulemaking (P-1516) filed by DGAC. DGAC requested that for domestic transportation the marine pollutant list be maintained as the basis for regulating substances hazardous to the environment while permitting a substance meeting the new IMDG Code criteria to be transported as a substance hazardous to the aquatic environment. DGAC also recommended that the current 10% rule for classifying mixtures containing marine pollutants be used while allowing compliance with the mixture calculation in the IMDG Code. Though we did not propose to implement a 10% rule for marine pollutants irrespective of whether

they are identified as a severe marine pollutant, we requested comments on that recommendation. In particular, we were interested in the environmental impacts of such a change and its effect on human health and the environment. We invited comments on the practical consequences of the differing approaches, for instance, in the event of release of such substances into aquatic resources and drinking water. We did not receive any comments specifically addressing the release of substances into aquatic resources and drinking water. However, comments pertaining to the proposal to maintain the current regulatory approach to facilitate transportation without mandating use of the new GHS-based criteria are discussed under the section entitled “Appendix B to § 172.101” in this rulemaking.

C. Amendments Not Being Adopted in this Final Rule

This final rule makes changes to the HMR based on amendments to the Fifteenth revised edition of the UN Recommendations, Amendment 34 to the IMDG Code, and the 2009-2010 ICAO TI, which become effective January 1, 2009. However, we are not adopting all of the amendments to those documents into the HMR. In many cases, amendments to the international recommendations and regulations have not been adopted because the framework or structure of the HMR makes adoption unnecessary. In other cases, we have handled, or will be handling, the amendments in separate rulemaking proceedings. If we have inadvertently omitted a proposed amendment in the NPRM, we will attempt to include the omission in this final rule. However, our ability to make changes in a final rule is limited by requirements of the Administrative Procedure Act (5 U.S.C. 553). In some instances, we can adopt a provision inadvertently omitted in the

NPRM if it is clearly within the scope of changes proposed in the notice, does not require substantive changes from the international standard on which it is based, and imposes minimal or no cost impacts on persons subject to the requirement. Otherwise, in order to provide opportunity for notice and comment, the change must be proposed in an NPRM.

One of the goals of this rulemaking is to continue to maintain consistency between the HMR and the international requirements. We are not striving to make the HMR identical to the international regulations, but rather to remove or avoid potential barriers to international transportation.

Below is a listing of significant amendments to the international regulations that we are not adopting in this final rule with a brief explanation of why the amendment was not included:

- Requirements for Hazardous Materials Security. The UN and ICAO have adopted minimal requirements pertaining to hazardous materials security. On March 25, 2003, we published a final rule to enhance the security of hazardous materials transported in commerce (68 FR 14510). Pursuant to that final rule, shippers and carriers of certain highly hazardous materials are required to develop and implement security plans. In addition, all shippers and carriers of hazardous materials are required to include a security component. The security plan requirements apply to shipments of hazardous materials that must be placarded and to select agents. In a separate rulemaking [PHMSA-06-25885 (HM-232F); 73 FR 52558, September 9, 2008) we proposed revisions to the list of materials for which security plans are required to ensure that the requirements apply only to those materials that pose a true security risk in transportation. We expect to

publish a final rule in the spring of 2009.

- Requirements for Radioactive Materials. We are not adopting provisions pertaining to the transportation of Class 7 (radioactive) materials. Amendments to requirements pertaining to the transportation of Class 7 (radioactive) materials are based on changes contained in the International Atomic Energy Agency (IAEA) publication, “IAEA Safety Standards: Regulations for the Safe Transport of Radioactive Materials.” Due to their complexity, these changes are being addressed in a separate rulemaking under Docket HM-250.
- Requirements for Infectious Substances. The UN and ICAO have adopted minimal standards applicable to the transportation of human remains and animal carcasses as to which there is minimal likelihood that pathogens are present. For purposes of the HMR, such specimens are not considered hazardous, and their transportation is not subject to the HMR. These specimens are currently regulated by the Food and Drug Administration of the U.S. Department of Health and Human Services, the U.S. Department of Agriculture, and State and local authorities. Therefore, we are not adopting the new international provisions into the HMR.
- Requirement for Definition of “Target” for Use During Packaging Testing. Amendments to the HMR pertaining to the definition of a “target” for a drop test performed on non-bulk packagings are not being adopted in this rulemaking. The UN Recommendations amended the description to specify that the surface of a target must be immovable, free of defects, rigid, and large enough to ensure that the test package falls entirely upon the surface. We believe the current provisions

in the HMR pertaining to the drop test method for non-bulk packagings adequately address this issue.

- Requirement for Vibration Test for All Intermediate Bulk Containers (IBCs).
Amendments to the HMR pertaining to the test method and duration of a vibration test for IBCs are not being adopted in this rulemaking. PHMSA successfully helped to introduce to the UN Recommendations a vibration test requirement for IBCs that would both enhance safety and help to establish a more equivalent testing protocol for manufacturers of IBCs worldwide. However, the vibration test adopted by the UN may be conducted as a “stand-alone” design-type test on an otherwise untested IBC. In contrast, the vibration test originally introduced by PHMSA would require the vibration test to be conducted in sequence with other required tests. We believe this method provides a higher degree of safety, and therefore, are not amending the vibration test requirements currently in the HMR.
- Requirement for Bromine (UN1744). In the most current edition of the UN Recommendations, a packing instruction and a special packing provision for “Bromine,” UN1744 were consolidated into a new packing instruction specifically for Bromine. After reviewing this new packing instruction, we believe the current provisions in the HMR pertaining to the packaging of Bromine are adequate. The most noteworthy revision to the UN packing instruction which was initially adopted by the UN, was the removal of the intermediate packaging requirement for combination packagings. This decision was later reversed. Therefore, because the HMR already require an intermediate packaging, we are not adopting this amendment in this rulemaking.

- Exceptions to Packaging for Paint and Paint-Related Material. Amendments authorizing certain exceptions from performance testing of packagings containing paint and certain paint-related materials are not being adopted in this rulemaking. Currently, both the UN Recommendations and the HMR contain certain packaging exceptions for specific adhesives, printing inks, printing ink related materials, paint, paint-related materials and resin solutions (see UN Packing Instruction P001, Special Packing Provision PP1 and 49 CFR 173.173(b)(2)). The Fifteenth revised edition of the UN Recommendations expands the exceptions to also include such materials when classified as environmentally hazardous substances. We are currently reviewing the incident data related to these exceptions and may consider this issue for a future rulemaking.
- Requirements for Lithium Batteries. Amendments to the HMR pertaining to lithium batteries based on the Fifteenth revised edition of the UN Recommendations are not being adopted in this rulemaking. We are reviewing these requirements and may consider them for a future rulemaking.
- Requirements for Additional Signage. Amendments to the HMR pertaining to additional signage in airports are not being adopted in this rulemaking. We are reviewing these amendments, including the related cost impacts, and may consider them for a future rulemaking. In the NPRM, we requested comments to provide information and suggestions that we can use during a future review. One commenter [ATA] states that it does not support airport signage as a primary means of hazard communication and that the ICAO requirements for more information on signage are not effective or efficient. Further, the commenter

urges PHMSA not to adopt the ICAO signage requirements. We acknowledge the commenter's remarks and will include them in our consideration of a future rulemaking.

- Requirement for Hazard Communication on an Air Waybill: Amendment to require the consignor to indicate on the air waybill that certain hazardous materials or articles have met the conditions for transport as specified in applicable exceptions or special provisions. Based on comments received in response to the NPRM and the past history of the safe transport of the hazardous materials that would be subject to these amendments, we are not adopting the amendments in this final rule. However, we will continue to review the merits of this hazard communication amendment and may reconsider incorporating the amendment or a similar revised version of the amendment in a future rulemaking.

III. Section-By-Section Review

Following is a section-by-section review of the amendments adopted in this final rule. Note that this section-by-section review excludes the amendments applicable to the transportation of batteries and battery-powered devices, which are detailed in Section II of this Notice.

Part 171

Section 171.7

The "National Technology Transfer and Advancement Act of 1996" directs agencies to use voluntary consensus standards. According to OMB Circular A-119,

“Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities,” government agencies must use voluntary consensus standards wherever practical in the development of regulations. Agency adoption of industry standards promotes productivity and efficiency in government and industry, expands opportunities for international trade, conserves resources, improves health and safety, and protects the environment.

To these ends, PHMSA actively participates in the development and updating of consensus standards through representation on more than 20 consensus standards bodies. PHMSA regularly reviews updated consensus standards and considers their merit for inclusion in the HMR.

Section 171.7 lists all standards incorporated by reference into the HMR. For this rulemaking, we evaluated updated international consensus standards pertaining to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations, and vessel stowage requirements and determined that the revised standards provide an enhanced level of safety without imposing significant compliance burdens.

One commenter [TFI] requests that we amend the HMR to include the most current edition of the Transport Canada’s TDG Regulations by referencing “Amendment 6” in the § 171.7 list of standards incorporated by reference. Amendment 6 of the TDG was published in Part II of the Canada Gazette on February 20, 2008. The § 171.7 list of standards of the HMR currently lists Amendment 5. We acknowledge the commenter’s request to include Amendment 6 in our list of standards incorporated by reference. We are currently evaluating the changes in Amendment 6 of the TDG to determine whether

the revised standards provide an enhanced level of safety without imposing significant compliance burdens, and will consider its inclusion in the HMR in a future rulemaking. However, in this final rule we are incorporating the new subsection 4.18(5) of Amendment 6 pertaining to placarding of anhydrous ammonia, UN1005. This amendment will maintain our long-standing policy of accepting the TDG placards in the U.S. and will facilitate the safe and efficient transportation of anhydrous ammonia between the U.S. and Canada.

We did not receive comments opposing the incorporations by reference proposed in the NPRM; therefore we are updating the addresses and the incorporation by reference materials for the ICAO TI, the IMDG Code, and the UN Recommendations. In addition, we are updating the ISO address and adding two new ISO Standards. The updated editions of these standards become effective January 1, 2009.

The following currently referenced standards will be updated as shown in the amended § 171.7:

- International Civil Aviation Organization (ICAO), Technical Instructions for the Safe Transport of Dangerous Goods by Air, 2007-2008 Edition.
- International Maritime Organization (IMO), International Convention for the Safety of Life at Sea (SOLAS) Amendments 2000, Chapter II-2, Regulation 19, 2001 and The International Maritime Organization's International Maritime Dangerous Goods Code, 2006 Edition, Incorporating Amendment 33-06, English Edition, Volumes 1 and 2.
- International Organization for Standardization, ISO 10156:1996, Gases and Gas Mixtures—Determination of fire potential and oxidizing ability for the

selection of cylinder valve outlets, Second edition February 1996 (E) and ISO 10156—2:2005, Gas cylinders—Gases and gas mixtures—Part 2: Determination of oxidizing ability of toxic and corrosive gases and gas mixtures, First edition, August 2005, (E).

- Transport Canada, Transportation of Dangerous Goods Regulations (Transport Canada TDG Regulations), August 2001 including Clear Language Amendments SOR/2001–286, Amendment 1 (SOR/2002–306) August 8, 2002; Amendment 2 (SOR/2003–273) July 24, 2003; Amendment 3 (SOR/2003–400) December 3, 2003; Amendment 4 (SOR/2005–216) July 13, 2005; and Amendment 5 (SOR/2005–279) September 21, 2005
- United Nations, The UN Recommendations on the Transport of Dangerous Goods, Fourteenth revised edition (2005), Volumes I and II.

Section 171.14

This section prescribes transitional provisions for recently adopted regulatory changes in the HMR. In a final rule, under Docket HM-218D (73 FR 4699; on January 28, 2008), we added a new entry for “Ethanol and gasoline mixture or Ethanol and motor spirit or Ethanol and petrol mixture, with more than 10% ethanol, 3, UN3475, II” in the HMT. Although we included a delayed compliance date for the implementation of the new identification number marking requirements in § 172.332(c)(6) and (c)(7), we did not provide the same transition period in the regulatory text for the continued use of the proper shipping names for these materials that were in effect prior to the publication of the HM-218D final rule. For example, for a gasoline and alcohol fuel blend containing

85 percent alcohol (E85), the most appropriate description prior to the HM-218D rulemaking was “Flammable liquid, n.o.s., (ethanol, gasoline), 3, UN1993.” Our intent was to minimize the costs of transitioning to this new description by allowing the continued use of shipping names for these materials that were in effect prior to publication of the HM-218D final rule for a period of two years from the effective date, as discussed in the HM-218D final rule preamble. To correct this oversight, in this rulemaking, we are adding a new paragraph (h) to specify that effective October 1, 2010, the new proper shipping name “Ethanol and gasoline mixture or ethanol and motor spirit mixture or ethanol and petrol mixture,” and the revised proper shipping name “Gasohol gasoline mixed with ethyl alcohol, with not more than 10% alcohol must be used, as appropriate.

Section 171.25

Section 171.25 specifies additional requirements for the use of the IMDG Code when a hazardous material is offered for transportation to, from, or within the U.S. by vessel, and by motor carrier and rail, provided all or part of the movement is by vessel. Recently, an incident occurred in which a portable tank containing “Argon, refrigerated liquid (cryogenic liquid),” UN1951, stowed below the deck of a vessel released its contents, resulting in the asphyxiation deaths of three individuals who entered the confined cargo space where the portable tank was stowed. The HMR currently prohibit the stowage of such materials below deck (§ 176.76(g)) because of the potential hazard of asphyxiation when large volumes of refrigerated liquefied gases are released below the deck of a vessel in confined spaces. However, the IMDG Code does not prohibit the

stowage of tanks below deck in all cases. Some refrigerated liquefied gases, including argon, are assigned to stowage “Category B” in column (16) of the dangerous goods list of the IMDG Code. Therefore, in the NPRM, we proposed to revise § 171.25(c)(5) to specify that portable tanks, cargo tanks, and tank cars containing cryogenic liquids must be “on deck” regardless of the stowage authorized in the IMDG Code.

Two commenters [Signal, VOHMA] support the proposal, but both express concern pertaining to its implementation. VOHMA states that “we are concerned that vessels transiting U.S. ports and in compliance with the current IMDG Code authorization for “under-deck” stowage may be problematic” and requests that PHMSA ensure that shippers are made aware of the requirement. We agree with the commenter. PHMSA submitted a proposal to the IMO Subcommittee on Dangerous Goods, Solid Cargoes and Containers to address the issue of stowage of cryogenic liquids as discussed above. IMO will adopt the provisions in the IMDG Code under Amendment 35-10. In the interim period between adoption in the HMR and adoption in the IMDG Code, PHMSA will work with the IMO and various trade associations to advise shippers and carriers of this new provision.

Signal recommends that PHMSA revise paragraph (d) of this section (Use of the IMDG Code in port areas) to clarify that the provision to store portable tanks, cargo tanks, and tank cars containing cryogenic liquids “on deck” is also applicable to port areas. The commenter expresses concern regarding vessels passing through U.S. port areas where cryogenic liquids may be stowed “under-deck” in accordance with the IMDG Code stowage requirements. The commenter believes the hazard is just as great to U.S. maritime workers even though the cargo may not be loaded or unloaded in the U.S. port

of call. Additionally, pending a revision to paragraph (d), Signal also urges PHMSA to waive the proposed one year transition period and make the provisions for stowage of cryogenic liquids effective on the date of publication of this rulemaking. We agree with the commenter's concern regarding the applicability of the provision in U.S. port areas and due to the immediate nature of the risk associated with stowing bulk packagings of cryogenic liquids "under-deck," in this final rule, we are adding a new paragraph (d)(3) to specify that this provision is applicable to U.S. port areas. We also agree with the recommendation to make the provisions effective immediately. Therefore, in this final rule, we are revising paragraphs (c)(5) and (d)(3) of § 171.25 to indicate that these specific requirements are effective 30 days after the date of publication of the rulemaking, except for shipments transporting these materials prior to the effective date of this amendment.

Part 172

Section 172.101 Hazardous Materials Table (HMT)

Section 172.101 contains the HMT and explanatory text for each of the columns in the HMT. We proposed to make various amendments to the HMT. Readers should review all changes for a complete understanding of the amendments. For purposes of the Government Printing Office's typesetting procedures, changes to the HMT appear under three sections of the Table, "remove," "add," and "revise." Certain entries in the HMT, such as those with revisions to the proper shipping names, appear as a "remove" and "add." Amendments to the HMT for the purpose of harmonizing with international standards include, but are not limited to, the following:

In the final rule for Docket HM-215G (69 FR 76044; December 20, 2004), we added new generic entries for Organometallic substances consistent with descriptions added to the UN Recommendations. In the final rule, we allowed the continued use of certain specific Organometallic entries; however, we anticipated removing the specific Organometallic entries from the HMT by January 1, 2007. The entries were to be removed because they were superseded by more appropriate generic entries, but were inadvertently overlooked. Therefore, in this final rule, we are removing the following Organometallic entries for consistency with the intent of HM-215G:

- UN3052 Aluminum alkyl halides, liquid
- UN3461 Aluminum alkyl halides, solid
- UN3076 Aluminum alkyl hydrides
- UN3051 Aluminum alkyls
- UN1366 Diethylzinc
- UN1370 Dimethylzinc
- UN2445 Lithium alkyls, liquid
- UN3433 Lithium alkyls, solid
- UN3053 Magnesium alkyls
- UN2005 Magnesium diphenyl

Portable tank Special Provision TP12 states, “This material is considered highly corrosive to steel.” The phrase “highly corrosive to steel” is not defined by any specific criteria. Further, “TP12,” unlike other TP codes, is simply a statement and does not

apply any regulatory requirement. It is unclear if all highly corrosive materials are assigned Special Provision TP12, or if this statement provides any useful guidance for selecting an appropriate portable tank. Therefore, we are revising the following entries by removing Special Provision TP12:

UN1716	Acetyl bromide
UN1717	Acetyl chloride
UN2584	Alkyl sulfonic acids, liquid <u>or</u> Aryl sulfonic acids, liquid <u>with more than 5 percent free sulfuric acid</u>
UN2571	Alkyl sulfuric acids
UN2817	Ammonium hydrogendifluoride, solution, PG II and III
UN2796	Battery fluid, acid
UN1736	Benzoyl chloride
UN1737	Benzyl bromide
UN1738	Benzyl chloride
UN1738	Benzyl chloride <u>unstabilized</u>
UN1739	Benzyl chloroformate
UN2692	Boron tribromide
UN1742	Boron trifluoride acetic acid complex, liquid
UN1743	Boron trifluoride propionic acid complex, liquid
UN1744	Bromine
UN1745	Bromine pentafluoride
UN1744	Bromine solutions
UN1746	Bromine trifluoride

UN2513	Bromoacetyl bromide
NA2742	sec-Butyl chloroformate
UN2353	Butyryl chloride
NA9263	Chloropivaloyl chloride
UN1754	Chlorosulfonic acid <u>with or without sulfur trioxide</u>
UN1755	Chromic acid solution, PG II and PG III
UN1758	Chromium oxychloride
UN2240	Chromosulfuric acid
NA9264	3,5-Dichloro-2,4,6-trifluoropyridine
UN1764	Dichloroacetic acid
UN1768	Difluorophosphoric acid, anhydrous
NA2927	Ethyl phosphonothioic dichloride, anhydrous or Ethyl phosphorodichloridate
NA2845	Ethyl phosphonous dichloride, anhydrous <u>pyrophoric liquid</u>
UN1776	Fluorophosphoric acid anhydrous
UN1778	Fluorosilicic acid
UN1777	Fluorosulfonic acid
UN1782	Hexafluorophosphoric acid
UN1789	Hydrochloric acid PG II and PG III
UN1786	Hydrofluoric acid and Sulfuric acid mixtures
UN1790	Hydrofluoric acid, <u>with more than 60 percent strength</u>
UN1790	Hydrofluoric acid, <u>with not more than 60 percent strength</u>
NA2742	Isobutyl chloroformate

UN3246	Methanesulfonyl chloride
NA9206	Methyl phosphonic dichloride
NA2845	Methyl phosphonous dichloride, <u>pyrophoric liquid</u>
NA1556	Methyldichloroarsine
UN1826	Nitrating acid mixtures, spent <u>with more than 50 percent nitric acid</u>
UN1826	Nitrating acid mixtures, spent <u>with not more than 50 percent nitric acid</u>
UN1796	Nitrating acid mixtures <u>with more than 50 percent nitric acid</u>
UN1796	Nitrating acid mixtures <u>with not more than 50 percent nitric acid</u>
UN2031	Nitric acid <u>other than red fuming, with more than 70 percent nitric acid</u>
UN2031	Nitric acid <u>other than red fuming, with not more than 20 percent nitric acid</u>
UN2031	Nitric acid <u>other than red fuming, with not more than 70 percent nitric acid</u>
UN2032	Nitric acid, red fuming
UN1798	Nitrohydrochloric acid
UN2308	Nitrosylsulfuric acid, liquid
UN1873	Perchloric acid <u>with more than 50 percent but not more than 72 percent acid, by mass</u>
UN1817	Pyrosulfuryl chloride
UN2879	Selenium oxychloride
UN1906	Sludge, acid
UN1828	Sulfur chlorides
UN1829	Sulfur trioxide, stabilized
UN1831	Sulfuric acid, fuming <u>with less than 30 percent free sulfur trioxide</u>
UN1831	Sulfuric acid, fuming <u>with 30 percent or more free sulfur trioxide</u>

UN1832	Sulfuric acid, spent
UN1830	Sulfuric acid <u>with more than 51 percent acid</u>
UN2796	Sulfuric acid <u>with not more than 51 percent acid</u>
UN1834	Sulfuryl chloride
UN1836	Thionyl chloride
UN2699	Trifluoroacetic acid
NA9269	Trimethoxysilane

We proposed to add a new non-bulk packaging section (§ 173.206) for the transportation of certain flammable, corrosive and toxic materials, specifically, chlorosilanes that have water-reactive properties. For a detailed summary of the rationale, see the discussion under § 173.206 in this section of the rulemaking. The following entries are revised in Column (8B) by replacing the current non-bulk packaging provision with “206”:

UN1724	Allyltrichlorosilane, stabilized
UN1728	Amyltrichlorosilane
UN1747	Butyltrichlorosilane
UN1753	Chlorophenyltrichlorosilane
UN2986	Chlorosilanes, corrosive, flammable, n.o.s.
UN2987	Chlorosilanes, corrosive, n.o.s.
UN2985	Chlorosilanes, flammable, corrosive, n.o.s.
UN3362	Chlorosilanes, toxic, corrosive, flammable, n.o.s.

UN3361	Chlorosilanes, toxic, corrosive, n.o.s.
UN1762	Cyclohexenyltrichlorosilane
UN1763	Cyclohexyltrichlorosilane
UN2434	Dibenzylchlorosilane
UN1766	Dichlorophenyltrichlorosilane
UN1767	Diethylchlorosilane
UN1162	Dimethylchlorosilane
UN1769	Diphenylchlorosilane
UN1771	Dodecyltrichlorosilane
UN2435	Ethylphenylchlorosilane
UN1196	Ethyltrichlorosilane
UN1781	Hexadecyltrichlorosilane
UN1784	Hexyltrichlorosilane
UN2437	Methylphenylchlorosilane
UN1250	Methyltrichlorosilane
UN1799	Nonyltrichlorosilane
UN1800	Octadecyltrichlorosilane
UN1801	Octyltrichlorosilane
UN1804	Phenyltrichlorosilane
UN1816	Propyltrichlorosilane
UN1298	Trimethylchlorosilane
UN1305	Vinyltrichlorosilane, stabilized

For consistency in the assignment of Portable tank Special Provision TP13 (which requires provision of self-contained breathing apparatus when certain hazardous materials are transported by vessel) to all chlorosilanes, the following entries are revised in Column (7) by adding Special Provision TP13:

UN2987	Chlorosilanes, corrosive, n.o.s
UN1781	Hexadecyltrichlorosilane
UN1804	Phenyltrichlorosilane
UN1818	Silicon tetrachloride

We consider Portable tank Special Provision TP7 essential for the safe transport of chlorosilanes. This special provision requires the vapor space to be purged of air by nitrogen or other means. However, there is no consistent assignment of “TP7” to chlorosilanes. For enhanced safety and consistency with international regulations, the following entries are revised in Column (7) by adding Special Provision TP7:

UN3362	Chlorosilanes, toxic, corrosive, flammable, n.o.s.
UN3361	Chlorosilanes, toxic, corrosive, n.o.s.
UN1250	Methyltrichlorosilane
UN1305	Vinyltrichlorosilane, stabilized

Chlorosilanes of Class 3 and Class 8 are currently authorized for transport in metal IBCs under Special Provisions IB1 and IB2. Because metal IBCs have lift-up lids with clamp screws, we are concerned that the overturn of a metal IBC during an accident

may lead to an opening of a lift-up lid and result in a release of chlorosilanes from these packagings. To address these concerns, we are prohibiting the use of metal IBCs by removing the respective Special Provisions IB1 or Special Provision IB2 provisions from the following entries. We are also adding Special Provision TP7 to require the vapor space to be purged of air, as discussed above:

UN2986 Chlorosilanes, corrosive, flammable, n.o.s.

UN2987 Chlorosilanes, corrosive, n.o.s.

UN2985 Chlorosilanes, flammable, corrosive, n.o.s.

Bottom discharge openings are currently allowed on portable tanks used for the transport of most chlorosilanes. For example, some chlorosilane entries are assigned Portable tank Special Provision T7, which provides for bottom opening requirements. As part of a voluntary initiative to enhance safety, portions of the regulated community have begun to use only portable tanks without bottom discharge connections. To further enhance safety and to prohibit the use of portable tanks with bottom discharge openings, we are revising the following entries by replacing Special Provision T7 with Special Provision T10. Special Provision T10 prohibits the use of bottom discharge openings. We are also deleting the respective IBC Special Provisions IB1 or IB2 to prohibit the use of metal IBCs and adding Special Provision TP7 to require the vapor space to be purged of air, as discussed above:

UN1724	Allyltrichlorosilane, stabilized
UN1728	Amyltrichlorosilane
UN1747	Butyltrichlorosilane
UN1753	Chlorophenyltrichlorosilane
UN1762	Cyclohexenyltrichlorosilane
UN1763	Cyclohexyltrichlorosilane
UN2434	Dibenzylchlorosilane
UN1766	Dichlorophenyltrichlorosilane
UN1767	Diethylchlorosilane
UN1162	Dimethylchlorosilane
UN1769	Diphenylchlorosilane
UN1771	Dodecyltrichlorosilane
UN2435	Ethylphenylchlorosilane
UN1196	Ethyltrichlorosilane
UN1781	Hexadecyltrichlorosilane
UN1784	Hexyltrichlorosilane
UN2437	Methylphenylchlorosilane
UN1799	Nonyltrichlorosilane
UN1800	Octadecyltrichlorosilane
UN1801	Octyltrichlorosilane
UN1804	Phenyltrichlorosilane
UN1816	Propyltrichlorosilane
UN1298	Trimethylchlorosilane

As a safety measure for the transport of most chlorosilanes, we are applying Special Provision T10, to prohibit bottom discharge openings on portable tanks used to transport chlorosilanes. However, for chlorosilanes meeting the criteria of Division 4.3 and for “n.o.s.” entries meeting the criteria for Classes 3, 8 and Division 6.1 that have been assigned Special Provision T10, we are adopting the general assignment of Special Provision T14 rather than Special Provision T10. In addition to prohibiting bottom outlet openings, Special Provision T14 requires a higher minimum test pressure for the periodic hydrostatic pressure test. We believe a higher minimum test pressure would provide an increased level of safety when transporting these types of chlorosilanes in portable tanks. Some chlorosilanes meeting the above classification criteria (e.g., UN2987 and UN1295) have already been assigned Special Provision T14. Therefore, to enhance safety and for consistency in assigning special provisions, we are revising the following entries by replacing Special Provision T10 with Special Provision T14 in Column (7):

UN2988	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.
UN1183	Ethyldichlorosilane
UN1242	Methyldichlorosilane

The following entries are revised by assigning PG II in column (5) rather than PG I. The flammability properties (i.e., the flashpoint) place them in PG II, and no additional evidence indicates the entries are more corrosive than all the other chlorosilanes classed as a Class 3, subsidiary Class 8, PG II (e.g., UN1126). Therefore, in accordance with the Precedence of hazard table (§ 173.2a), the entries are classed as Class 3, subsidiary Class

8, PG II materials. In addition, as discussed above, we are replacing Special Provision T7 with Special Provision T10 for most chlorosilanes, however, for these entries Special Provision T10 replaces the previously assigned Special Provision T11. The entries are revised in Column (5) by assigning PG II, and in Column (7) by replacing Special Provision T11 with Special Provision T10:

UN1250 Methyltrichlorosilane
UN1305 Vinyltrichlorosilane, stabilized

As discussed above, for most chlorosilanes, we are replacing Special Provision T7 with Special Provision T10, which prohibits bottom discharge openings. In addition, we are revising the following entries by replacing Special Provision T11 with Special Provision T14 which also prohibits bottom discharge openings in portable tanks:

UN2986 Chlorosilanes, corrosive, flammable, n.o.s.
UN2985 Chlorosilanes, flammable, corrosive, n.o.s.
UN3362 Chlorosilanes, toxic, corrosive, flammable, n.o.s
UN3361 Chlorosilanes, toxic, corrosive, n.o.s.

Chlorosilanes of Division 6.1 are authorized for transport in metal IBCs under Special Provision IB1. As discussed above, we are prohibiting the use of metal IBCs for the transport of chlorosilanes. Additionally, Special Provision TP27 is recommended for chlorosilanes assigned Special Provision T14. If found acceptable according to the test

pressure definition in § 178.274, Special Provision TP27 allows a test pressure of 4 bar instead of 6 bar. We are assigning Portable tank Special Provision TP27 to all “n.o.s.” entries of Classes 3, 8 and Division 6.1. Entries for Division 4.3 are assigned Special Provision TP27 because of higher risk of a possible release of a flammable gas. The following entries are revised in Column (7) by deleting Special Provision IB1 and adding Special Provision TP27:

UN3362 Chlorosilanes, toxic, corrosive, flammable, n.o.s

UN3361 Chlorosilanes, toxic, corrosive, n.o.s.

The following entries are revised by adding Special Provision IP2 to correct an inconsistency. When a hazardous material is assigned Special Provision IP2, the material must be offered for transportation in a closed freight container or a closed transport vehicle. “Chloroacetic acid, solid,” UN1751 is the only Division 6.1, PG II material assigned Special Provision IB8 that is not also assigned Special Provision IP2. Similarly, the remaining entries listed below are Division 5.1, PG II materials assigned Special Provision IB8 but not Special Provision IP2. For consistency in the assignment of Special Provision IP2, the following entries are revised in Column (7) by adding Special Provision IP2:

UN1751 Chloroacetic acid, solid

UN1463 Chromium trioxide, anhydrous.

UN2465 Dichloroisocyanuric acid, dry or Dichloroisocyanuric acid salts

UN1473	Magnesium bromate
UN2627	Nitrites, inorganic, n.o.s.
UN1484	Potassium bromate
UN1485	Potassium chlorate
UN1487	Potassium nitrate and sodium nitrite mixtures
UN1488	Potassium nitrite
UN1490	Potassium permanganate
UN1493	Silver nitrate
UN1494	Sodium bromate
UN1495	Sodium chlorate
UN3247	Sodium peroxoborate, anhydrous
UN2468	Trichloroisocyanuric acid, dry
UN1512	Zinc ammonium nitrite
UN1514	Zinc nitrate

Special Provision 36 places net quantity limits per package for medicines classed as hazardous materials. However, the quantity limits in the special provision are inconsistent with the net quantity packaging limits authorized under the limited quantities exceptions for these materials in §§ 173.150 and 173.153 of the HMR. Therefore, the following entries are revised in Column (7) by removing Special Provision 36:

UN3248	Medicine, liquid, flammable, toxic, n.o.s.
UN1851	Medicine, liquid, toxic, n.o.s.
UN3249	Medicine, solid, toxic, n.o.s.

Chemical oxygen generators are subject to stringent packaging and shipping requirements. We are adding a new Special Provision 62 to the following entries to emphasize that chemical oxygen generators are not authorized to be transported under the generic “oxidizer, n.o.s.” entries.

- UN3098 Oxidizing liquid, corrosive, n.o.s.
- UN3139 Oxidizing liquid, n.o.s.
- UN3099 Oxidizing liquid, toxic, n.o.s.
- UN3085 Oxidizing solid, corrosive, n.o.s.
- UN3137 Oxidizing solid, flammable, n.o.s.
- UN1479 Oxidizing solid, n.o.s.
- UN3100 Oxidizing solid, self-heating, n.o.s.
- UN3087 Oxidizing solid, toxic, n.o.s.
- UN3121 Oxidizing solid, water-reactive, n.o.s.

The following entries are revised by adding a reference to packaging section “307” to Column (8A) for consistency with international regulations regarding exception from the requirements for manufactured articles and apparatuses containing minimal amounts of inert gas. See the discussion under § 173.307 in this section of the rulemaking for additional information regarding this change.

- UN1006 Argon, compressed
- UN1046 Helium, compressed

UN1970	Krypton, compressed
UN1065	Neon, compressed
UN2036	Xenon, compressed

The entry “Amines, flammable, corrosive, n.o.s. or Polyamines, flammable, corrosive, n.o.s.,” UN2733 is revised to include the PG II and PG III entries in proper order to correct inadvertent assignment of the entries to UN2734. This revision appears as a “Remove/Add” in this rulemaking.

The entry “Amines, liquid, corrosive, flammable n.o.s. or Polyamines, liquid corrosive, flammable n.o.s.,” UN2734 is revised to include a comma after flammable in both proper shipping names and a comma between liquid and corrosive in the second proper shipping name in Column (2) and to remove the PG II and PG III entries for “flammable, corrosive” to correct inadvertent assignment of these entries. This revision appears as a “Remove/Add” in this rulemaking.

The entry “The entry “Batteries, dry, containing potassium hydroxide solid, electric storage,” UN3028 is revised by adding to Column (7) a reference to new Special Provision 237.

The entries “Boron trifluoride,” UN1008 and “Hydrogen iodide, anhydrous” UN2197 are revised by adding the Class 8 subsidiary hazard label to Column (6) for consistency with international regulations and for consistency with all other Division 2.3 toxic gas entries in the HMT that also have the Class 8 subsidiary hazard.

The entry “Calcium manganese silicon,” UN2844 is revised in Column (7) by removing Special Provision IP2. When this material is transported in other than metal or

rigid plastic IBCs, Special Provision IP2 specifies they must be transported in a closed freight container or a closed transport vehicle. However, this is inconsistent with other Division 4.3, PG III materials that are not subject to this special provision.

For consistency with UN Recommendations, the entry “Chlorine,” UN1017 is revised in Column (6) by adding the Division 5.1 subsidiary hazard label. This label will help communicate that this material may cause or enhance the combustion of other materials.

The hazardous materials descriptions for the entries “Chloronitrobenzene, liquid ortho,” UN3409 and “Chloronitrobenzenes, solid meta or para,” UN1578 are revised in Column (2) by removing the italicized word(s). The italicized word(s) associated with the proper shipping names are a potential source of confusion and are removed for clarification and consistency with the same entries in the UN Recommendations. This revision appears as a “Remove/Add” in this rulemaking.

The instruction for the entry “Cartridges, sporting, see Cartridges for weapons, inert, projectile, or Cartridges, small arms” is revised in Column (2) by correcting the misspelling of “projectile.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Corrosive, liquid, acidic, inorganic, n.o.s.,” UN3264 is revised in Column (2) by removing the comma appearing between “corrosive” and “liquid” to read “Corrosive liquid, acidic, inorganic, n.o.s.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Dyes, liquid, corrosive, n.o.s., or Dye intermediates, liquid, corrosive, n.o.s.,” UN2801 is revised in Column (2) by italicizing the “or” in the proper shipping name. This revision appears as a “Remove/Add” in this

rulemaking.

The entries “Environmentally hazardous substances, liquid, n.o.s.,” UN3082 and “Environmentally hazardous substances, solid, n.o.s.,” UN3077 are revised by adding a new Special Provision 335 in Column (7). Special Provision 335 clarifies that mixtures of non-hazardous solids and environmentally hazardous liquids or solids may be classified as UN3077 provided there is no free liquid visible at the time the substance is loaded or at the time the packaging or transport unit is closed.

In addition to flammable liquid fuel cell cartridges already provided for by the HMR, there are a number of other rapidly advancing fuel cell technologies employing a range of fuels. In this final rule, we are revising the entry for fuel cells containing a flammable liquid (UN3473) to include fuel cell cartridges containing a flammable liquid packed with or contained in equipment, and are adding four new proper shipping names to the HMT to describe the range of fuel used in fuel cell cartridges. These entries are:

(1) water-reactive substances (UN3476); (2) corrosive substances (UN3477); (3) liquefied flammable gas (UN3478); and (4) hydrogen in metal hydride (UN3479).

Readers should note that liquefied flammable gases and hydrogen in a metal hydride are both Division 2.1 materials used in fuel cell cartridges. However, the provisions necessary for the safe transportation of these articles are quite different and therefore, it is necessary to distinguish them with separate shipping descriptions.

A new entry “Fuel cell cartridges or Fuel cell cartridges contained in equipment or Fuel cell cartridges packed with equipment, containing corrosive substances,” UN3477 is added.

The proper shipping name for the entry “Fuel cell cartridges, containing

flammable liquids,” UN3473 is revised in Column (2) to read “Fuel cell cartridges or Fuel cell cartridges contained in equipment or Fuel cell cartridges packed with equipment, containing flammable liquids.” This revision appears as a “Remove/Add” in this rulemaking.

A new entry “Fuel cell cartridges or Fuel cell cartridges contained in equipment or Fuel cell cartridges packed with equipment, containing hydrogen in metal hydride,” UN3479 is added.

A new entry “Fuel cell cartridges or Fuel cell cartridges contained in equipment or Fuel cell cartridges packed with equipment, containing liquefied flammable gas,” UN3478 is added.

A new entry “Fuel cell cartridges or Fuel cell cartridges contained in equipment or Fuel cell cartridges packed with equipment, containing water-reactive substances,” UN3476 is added.

The entry “Gasohol,” NA1203 is revised in Column (7) by adding Special Provision 177 to indicate that mixtures of gasoline and ethanol with less than 10 percent ethanol for use in internal combustion engines (e.g., automobiles) must be assigned the PG II entry regardless of variations in volatility.

The entry “Gasoline,” UN1203, is revised in Column (7) by adding Special Provision 177 and Special Provision IB2. Special Provision 177 is added to indicate that gasoline for use in an internal combustion engine (e.g., automobiles) must be assigned the PG II entry regardless of variations in volatility. Special Provision IB2 was inadvertently removed under Docket No. HM-213 (68 FR 52363; September 3, 2003).

The proper shipping name for the entry “Hydrogen in a metal hydride storage

system,” UN3468 is revised in Column (2) to read “Hydrogen in a metal hydride storage system or Hydrogen in a metal hydride storage system contained in equipment or Hydrogen in a metal hydride storage system packed with equipment.” This revision appears as a “Remove/Add” in this rulemaking.

A new entry “1-Hydroxybenzotriazole, anhydrous, dry or wetted with less than 20 percent water, by mass,” UN0508 is added.

A new entry “1-Hydroxybenzotriazole, anhydrous, wetted with not less than 20 percent water, by mass,” UN3474 is added. One commenter [AHS] requests that PHMSA revise this entry to reflect the modified entry agreed upon by a recent UN Subcommittee meeting. The modified entry, “1-Hydroxybenzotriazole, monohydrate,” UN3474 would also have Special Provision 162 deleted from the entry. AHS notes that, “...The U.S. supported this change and....was instrumental in getting the modification accepted” by the UN Subcommittee. AHS also indicates the modified entry is, “....a more accurate description of this material.” Additionally, the commenter requests that PHMSA add the modified entry in the same manner as the addition of the new entry “Powder, smokeless,” UN0509, where the entry has a “D” in Column (1) indicating it is appropriate for domestic transport but may not be appropriate for international commerce. [The rationale for including “D” in Column (1) for the entry “Powder, smokeless,” UN0509 is explained in greater detail in the discussion of changes to § 173.62 in this section of the rulemaking.] Because the modified entry for UN3474 was not proposed in the NPRM, the request to include the modified version of the entry in the HMT (including the deletion of Special Provision 162 from the entry) is beyond the scope of this rulemaking. However, we will treat the commenter’s remarks as a petition

for rulemaking and consider the request for the modified hazardous materials description for inclusion in the HMT in a future rulemaking. No other comments opposing this proposal to add this entry were received; therefore, in this final rule, we are adopting the proposal without change. This appears as an “Add” in this rulemaking.

The entry “Hypochlorite solutions,” UN1791 is revised by adding the PG III description and associated packaging provisions to Columns (5) and (8), respectively. The PG III information was inadvertently omitted in a final rule under Docket HM-215I (71 FR 78596; December 29, 2006). This revision appears as a “Remove/Add” in this rulemaking.

The entry “Magnesium nitrate,” UN1474 is revised in Column (7) by adding a new Special Provision 332. Special Provision 332 specifies that magnesium nitrate hexahydrate is not subject to the HMR. Testing conducted by independent laboratories on magnesium nitrate hexahydrate in accordance with Test O.1: Test for Oxidizing Solids of the UN Manual of Tests and Criteria indicated magnesium nitrate hexahydrate does not have a burning rate to meet the criteria as a Division 5.1 oxidizer.

The hazardous materials description for the entry “Nitric acid, other than red fuming, with not more than 70 percent nitric acid,” UN2031, PG II is revised in Column (2) to read “Nitric acid, other than red fuming, with at least 65 percent, but not more than 70 percent nitric acid” to conform with proper shipping names that have similar descriptions (e.g., UN3366). This entry is also revised in Column (7) by adding Special Provision IP15, and in Column (10B) by removing vessel stowage codes “44,” “110,” and “111,” and adding “74.” Special Provision IP15 specifies that for UN2031 with more than 55% nitric acid, the use of rigid plastic IBCs and composite IBCs with a rigid plastic

inner receptacle would be authorized for two years from the date of manufacture of the IBC. Finally, the entry is revised by adding a Division 5.1 subsidiary hazard label to column (6). This revision appears as a “Remove/Add” in this rulemaking.

A new entry “Nitric acid, other than red fuming, with less than 65 percent nitric acid,” UN2031, PG II is added.

The entry “Nitrocellulose, solution, flammable with not more than 12.6 percent nitrogen, by mass, and not more than 55 percent nitrocellulose,” UN 2059, PG I, PG II and PG III is revised in Column (7) by adding a new Special Provision 198. Special Provision 198 authorizes nitrocellulose solutions containing less than 20% nitrocellulose to be transported as paint or printing ink.

The instruction for the entry “2,5-Norbornadiene, stabilized, see Bicyclo 2,2,1 hepta-2,5-diene, stabilized” is revised in Column (2) by enclosing “2,2,1” in brackets to denote the correct spelling and to be consistent with the proper shipping name entry “Bicyclo [2,2,1] hepta-2,5-diene, stabilized or 2,5-Norbornadiene, stabilized,” UN2251. This revision appears as a “Remove/Add” in this rulemaking.

The entry “Organometallic substance, liquid, water-reactive, flammable,” UN3399, PG I and PG II, is revised in Column (10A) by removing vessel stowage location code “E” and adding “D” to harmonize with the IMDG Code and SOLAS. Amendments were also made to SOLAS Chapter II-2/Regulation 19 strictly prohibiting the stowage of 4.3 liquids having a flashpoint less than 23 °C under deck or in enclosed roll-on/roll-off (ro-ro) vessel spaces. SOLAS Chapter II-2/Regulation 19 sets out fire-fighting construction and equipment requirements for vessels carrying dangerous goods. We believe this amendment is necessary to avoid the risk of a carrier stowing a package

in an enclosed space that is not properly equipped for a Class 4.3 material with a subsidiary Class 3 and a flashpoint less than 23 °C. When a flammable liquid with a flashpoint less than 23 °C is stowed under deck, the space must be ventilated but cannot have electrical equipment in the space. In most cases, natural or mechanical ventilation is used. However, powered ventilation is required for Class 4.3 under deck due to the risk of moisture in the air and the entry of sea water into the hold through the ventilation openings. This change would prohibit only UN3399 from under deck stowage. All other Class 4.3 liquids, with a subsidiary Class 3 and flashpoint less than 23 °C, are not permitted under deck or in enclosed ro-ro spaces under the IMDG Code.

The entry “Organometallic substance, solid, water-reactive,” UN3395 is revised to include the letter “G” in Column (1) to correct an inadvertent omission.

The entry “Organometallic substance, solid, water-reactive,” UN3395 is revised by adding the letter “G” in Column (1) to correct an inadvertent omission.

The entry “Organophosphorus compound, toxic, flammable, n.o.s.,” UN3279 is revised by adding the letter “G” in Column (1) to correct an inadvertent omission.

The proper shipping name for the entry “Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s.,” UN3344 is revised in Column (2) to read “Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s. or Pentaerythritol tetranitrate mixture, desensitized, solid, n.o.s. or PETN mixture, desensitized, solid, n.o.s.,” to conform to proper shipping names that have similar descriptions (e.g., UN0411). This revision appears as a “Remove/Add” in this rulemaking.

The entry “Polychlorinated biphenyls, solid,” UN3432 is revised in Column (7) by adding Special Provisions IP2 and IP4 for consistency with similar requirements for

“Polyhalogenated biphenyls, solid or Polyhalogenated terphenyls, solid,” UN3152.

Special Provisions IP2 and IP4 require IBCs other than metal or rigid plastic to be offered for transportation in a closed freight container or closed transport vehicle and require flexible, fiberboard, or wooden IBCs to be sift-proof and water-resistant or be fitted with a sift-proof or water-resistant liner, respectively.

The entries “Potassium persulfate,” UN1492 and “Sodium persulfate,” UN1505, are revised in Column (10B) by removing vessel stowage code “56” and adding “145.”

A new entry “Powder, smokeless,” UN0509, is added. A discussion of changes to § 173.62 in this section of the rulemaking provides an explanation of the addition of this entry.

The proper shipping name for the entry “Receptacles, small, containing a gas (gas cartridges) non-flammable without release device, not refillable and not exceeding 1 L capacity,” UN2037, 2.2 (5.1) is revised in Column (2) by correcting the word “agas” to read “gas.” Additionally, to harmonize this proper shipping name and punctuation with international regulations and standards, the word “non-flammable” is revised to read “oxidizing” and enclosed in parentheses, the word “or” is added and italicized before the words “gas cartridges,” and the parentheses enclosing the words “gas cartridges” are removed. The proper shipping name is corrected to read “Receptacles, small, containing gas or gas cartridges (oxidizing) without release device, not refillable and not exceeding 1 L capacity.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Receptacles, small, containing gas (gas cartridges) flammable without release device, not refillable and not exceeding 1 L capacity,” UN2037, 2.1 is revised in Column (2) to harmonize proper shipping name with

international regulations and standards. The parentheses enclosing “gas cartridges” are removed and the word “flammable” is enclosed in parentheses. Additionally, the word “or” is added and italicized before the words “gas cartridges.” The proper shipping name is corrected to read “Receptacles, small, containing gas or gas cartridges (flammable) without release device, not refillable and not exceeding 1 L capacity.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Receptacles, small, containing gas (gas cartridges) non-flammable without release device, not refillable and not exceeding 1 L capacity,” UN2037, 2.2 is revised in Column (2) to harmonize proper shipping name with international regulations and standards. The parentheses enclosing “gas cartridges” are removed and the word “non-flammable” is enclosed in parentheses. Additionally, the word “or” is added and italicized before the words “gas cartridges.” The proper shipping name is corrected to read “Receptacles, small, containing gas or gas cartridges (non-flammable) without release device, not refillable and not exceeding 1 L capacity.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Regulated medical waste, n.o.s. or Clinical waste, unspecified, n.o.s. or (BIO) Medical waste, n.o.s.,” UN3291 is revised in Column (2) to include “Biomedical waste, n.o.s.” and “Medical waste, n.o.s.” to clarify that these names may also be used under the HMR and to harmonize the proper shipping names for regulated medical waste with those prescribed in international regulations. This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping names for several “Self-heating solid” materials, specifically UN3088, UN3126, UN3127, UN3128, are revised in Column (2) to remove a comma

following the word “Self-heating.” These revisions appear as “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Trinitrophenol, wetted,” UN1344 is revised in Column (2) to read “Trinitrophenol, or Picric acid, wetted,” to conform to proper shipping names that have similar descriptions (e.g., UN3364). This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Trinitrotoluene, wetted,” UN1356 is revised to read “Trinitrotoluene, wetted or TNT, wetted,” to conform to proper shipping names that have similar descriptions (e.g., UN3366). This revision appears as a “Remove/Add” in this rulemaking.

A new entry “Signals, distress, ship,” UN0505 is added.

A new entry “Signals, distress, ship,” UN0506 is added.

A new entry “Signals, smoke,” UN0507 is added.

Currently, no portable tank instructions are assigned to “Water-reactive liquid, corrosive, n.o.s.,” UN3129; “Water-reactive liquid, n.o.s.,” UN3148; or to the PG I entries for “Water reactive solid, corrosive, n.o.s.,” UN3131; and “Water-reactive solid, n.o.s.,” UN2813. We are adding portable tank assignments (portable tank special provisions) consistent with the “Guidelines for Assigning Portable Tank Requirements to Substances in Classes 3 to 9.” These assignments are consistent with similarly classed entries in the HMT. The entries are revised in Column (7) as follows:

The entry “Water-reactive liquid, corrosive, n.o.s.,” UN3129, PG I, is revised by adding Special Provisions T14, TP2, and TP7.

The entry “Water-reactive liquid, corrosive, n.o.s.,” UN3129, PG II, is revised by

adding Special Provisions T11 and TP2.

The entry “Water-reactive liquid, corrosive, n.o.s.,” UN3129, PG III, is revised by adding Special Provisions T7 and TP1.

The entry “Water-reactive liquid, n.o.s.,” UN3148, PG I, is revised by adding Special Provisions T9, TP2, and TP7.

The entry “Water-reactive liquid, n.o.s.,” UN3148, PG II, is revised by adding Special Provisions T7 and TP2.

The entry “Water-reactive liquid, n.o.s.,” UN3148, PG III, is revised by adding Special Provisions T7 and TP1.

The entry “Water-reactive solid, corrosive, n.o.s.,” UN3131, PG I, is revised by adding Special Provisions T9, TP7, and TP33.

The entry “Water-reactive solid, n.o.s.,” UN2813, PG I, is revised by adding Special Provisions T9, TP7, and TP33.

The proper shipping name for the entry “Xenon,” UN2036, is revised to read “Xenon, compressed,” UN2036, for consistency with proper shipping names for other compressed gases (i.e., inert gases). This revision appears as a “Remove/Add” in this rulemaking.

Appendix B to § 172.101

Appendix B to § 172.101 lists Marine Pollutants regulated under the HMR and prescribes requirements for classifying and describing a marine pollutant. In the NPRM, we proposed to amend the introductory text and the List of Marine Pollutants to add an allowance for the use of the GHS-based classification criteria for materials toxic to the

aquatic environment (marine pollutants) contained in the IMDG Code.

We received several comments [CPTD, COSTHA, DGAC, Deeds, VOHMA] supporting our proposal to maintain the current regulatory approach to facilitate transportation without mandating use of the new GHS-based criteria for determination of a marine pollutant. COSTHA "...supports PHMSA's decision not to adopt the new IMDG classification criteria for Marine Pollutants and not to remove Appendix B from the 172.101." CPTD indicates, "... this new classification system is unnecessarily complicated, and... would involve an additional layer of complexity without a corresponding public benefit." Deeds recommends that if we maintain the differentiation between marine pollutants and severe marine pollutants in the List of Marine Pollutants, then PHMSA should adopt the GHS-based criteria in the IMDG Code as the basis for determining whether a marine pollutant is a severe marine pollutant. We disagree. Using the GHS-based criteria to determine a severe marine pollutant runs counter to our proposal not to mandate the use of such criteria. Therefore, for these reasons, in this final rule, we are adopting the amendment as proposed.

We also proposed to remove a number of entries that no longer meet the criteria for a marine pollutant. These entries were inadvertently retained in a rulemaking under Docket HM-215D (66 FR 33316; June 21, 2001 and 67 FR 15743; April 3, 2002). We did not receive any comments opposing the removal of these entries and, therefore, are removing the following entries from the List of Marine Pollutants: "5-Ethyl-2-picoline," "Ethyl propenoate, inhibited," "Isopropenylbenzene," and "2-Phenylpropene."

One commenter [CPTD] requests that we remove an additional entry (low aromatic mineral spirit (white spirit, low 15-20%)) from the List of Marine Pollutants in

Appendix B to § 172.101 because it would not meet the criteria for a marine pollutant using the IMDG Code. The removal of additional entries from the List of Marine Pollutants in Appendix B to § 172.101 is beyond the scope of this rulemaking. We did not propose to remove entries other than those being removed as a correction to an oversight from the HM-215D rulemaking, nor did we request comments on entries based on use of the GHS-based classification criteria in the IMDG Code that should be removed. However, we encourage the commenter to petition PHMSA to remove the entry with data demonstrating that the material would not meet the criteria under the IMDG Code or to apply for approval to have the material excepted as a marine pollutant in accordance with paragraph 5 of the introduction to Appendix B of § 172.101.

Section 172.102

Section 172.102 lists a number of special provisions applicable to the transportation of specific hazardous materials. Special provisions contain packaging requirements, prohibitions, and exceptions applicable to particular quantities or forms of hazardous materials. Unless otherwise noted, we received no comments opposing these proposals; therefore, in this final rule, we are adopting these proposals without change.

For consistency with international regulations, we are amending § 172.102 Special provisions, as follows:

Special Provision 36 specifies maximum net quantity limits per package for the transport of medicines classified as flammable or toxic (i.e., UN1851, UN3248, and UN3249). These limits are inconsistent with the packaging limits authorized in limited quantity exceptions for these materials in §§ 173.150 and 173.153 of the HMR. The

entries were initially introduced to the UN Recommendations with a special provision limiting the materials to PG II and III and requiring the materials to have a maximum net quantity per package of 5 L or 5 kg. However, since then, these materials have been authorized in the HMR as limited quantities and consumer commodities. This has created an inconsistency between the quantity limits per package in Special Provision 36 and the limits outlined in the limited quantity exceptions. Therefore, to resolve this inconsistency, we are removing Special Provision 36.

Special Provision 137 specifies conditions for exception from the HMR for certain types of vegetable fibers. We are revising this special provision to include “tampico fiber, dry” having a minimum baling density of 360 kg/m^3 as being eligible for this exception.

Special Provision 138 specifies insolubility criteria for lead compounds. We are revising the special provision by adding clarifying language that specifies lead compounds meeting the insolubility criteria outlined in the special provision are not subject to the HMR unless they meet the criteria for one of the other hazard classes.

Special Provision 150 specifies composition limits for uniform mixtures of fertilizers containing ammonium nitrate as the main ingredient. We are revising the composition limits outlined in paragraph (b) of the provision by adding the words “and/or mineral calcium sulphate” after “dolomite.”

In the final rule under Docket HM-215G (69 FR 76044; December 20, 2004), we added new generic entries to describe Organometallic materials consistent with descriptions added to the UN Recommendations but allowed the continued use of several specific Organometallic entries (e.g., Dimethylzinc, UN1370) that were currently in the

HMT. We anticipated removing these remaining entries from the HMT by January 1, 2007. The entries were to be removed because they were superseded by the addition of the more appropriate generic entries. However, they currently remain in the HMT. Therefore, we are removing the remaining specific Organometallic entries for consistency with the original intent of HM-215G to remove the entries by January 1, 2007. In addition, we are removing Special Provision 173. Special Provision 173 provides the option to use an appropriate generic entry listed in the HMT to describe a specific Organometallic material and was only assigned to those Organometallic materials. Because new generic entries have been added to the HMT this special provision only applies to the rulemaking entries that are to be removed, this special provision has become obsolete.

Special Provision 177 requires materials for use in internal combustion engines (e.g., in automobiles) to be assigned the PG II entry regardless of variations in volatility of the material. Currently, we assign Special Provision 177 to the entry “Ethanol and gasoline mixture or ethanol and motor spirit mixture or ethanol and petrol mixture,” UN3475. In the NPRM, we proposed to revise Special Provision 177 to specify its application to both gasoline and ethanol/gas mixtures for consistency with UN Recommendations that assign similar provisions to gasoline and mixtures of ethanol and gasoline. One commenter [American Trucking Associations] suggests that the language in Special Provision 177 is confusing in that, as written, Special Provision 177 requires that “gasoline or ethanol and gasoline mixtures must be assigned to this entry regardless of variations in volatility,” indicating assignment to a single entry when the special provision is actually assigned to multiple entries. We agree. Therefore, in this final rule,

we are revising Special Provision 177 to read “gasoline or ethanol and gasoline mixtures must be assigned to Packing Group II regardless of variations in volatility.”

Special Provision 188 specifies conditions for exception from the HMR for small lithium cells and batteries. We are revising the special provision to require the reporting of incidents that occur as a direct result of a fire, violent rupture, explosion, or a dangerous evolution of heat.

Special Provision 189 specifies conditions for exception from the HMR for medium lithium cells and batteries. We are revising the special provision to require the reporting of incidents that occur as a direct result of a fire, violent rupture, explosion, or a dangerous evolution of heat.

A new Special Provision 198 is being added to permit nitrocellulose solutions containing less than 20% nitrocellulose to be transported as paint or printing ink, as applicable.

A new Special Provision 237 is being added to specify that “Batteries, dry, containing potassium hydroxide solid, electric storage” must be prepared and packaged in accordance with the requirements of § 173.159(a) and for transportation by aircraft, § 173.159(b)(2).

A new Special Provision 332 is added to specify magnesium nitrate hexahydrate is not subject to the HMR.

A new Special Provision 335 is added to clarify proper classification of mixtures of solids which are not subject to the HMR and environmentally hazardous liquids or solids. Special Provision 335 specifies these mixtures would be classified as UN3077 and may be transported under that entry provided there is no free liquid visible at the time

the material is loaded or the packaging or transport unit is closed.

A new Special Provision IP15 is added to indicate that for “Nitric acid,” UN2031, with more than 55% nitric acid, the use of rigid plastic IBCs and composite IBCs with a rigid plastic inner receptacle is permitted for two years from the date of manufacture of the IBC.

Special Provision N82 references § 173.306 for classification criteria for flammable aerosols. However, classification criteria for flammable aerosols are found in § 173.115, specifically, in paragraph (k). Special Provision N82 is revised to reference § 173.115.

A new Special Provision N90 is added to prohibit the use of metal packagings for transport of “1-Hydroxybenzotriazole, anhydrous, wetted not less than 20 percent water, by mass,” UN3474.

Special Provision TP12 is removed. This provision states, “this material is considered highly corrosive to steel.” The phrase “highly corrosive to steel” is not defined by any specific criteria. Further, TP12, unlike other TP codes, is simply a statement and does not apply any regulatory requirement. It is unclear if all highly corrosive materials are assigned Special Provision TP12 or if this statement provides any useful guidance for selecting an appropriate portable tank. Therefore, we are deleting Special Provision TP12 from § 172.102(c)(8) “TP” Codes.

Section 172.202

Section 172.202 establishes the requirements for the description of hazardous materials on shipping papers. The UN Recommendations do not require the subsidiary

hazard to be indicated on the shipping paper when a subsidiary hazard label is not required. We agree that the requirement to indicate the subsidiary hazard on the shipping paper should be consistent with the requirement to apply a subsidiary risk label.

Therefore, in the NPRM, we proposed to harmonize with the UN Recommendations by making an appropriate revision to § 172.202(a)(3) to specify that the subsidiary hazard class or division number is not required to be entered when a corresponding subsidiary hazard label is not required.

One commenter [Omni] supports the proposal to amend § 172.202(a)(3) to specify that the subsidiary hazard class or division number is not required to be entered when the corresponding subsidiary hazard label is not required. Another commenter [Arkema] requests that we revise § 172.202(a)(3) to clarify that the subsidiary hazard must be entered on shipping papers corresponding to the additional subsidiary labeling required by § 172.402(a)(2), even though the subsidiary hazard is not indicated in Column (6) of the HMT in association with a hazardous material description. The commenter notes that “...enforcement personnel take exception to the fact that we identify subsidiary hazards on the shipping papers for some of our materials when a named material does not list a subsidiary in the 172.101 table.”

We do not believe that a revision to § 172.202(a)(3) is necessary for clarification of the requirements as requested by Arkema. Paragraph (a)(3) of this section clearly states that the subsidiary hazard class(es) and division number(s) must be entered in parentheses immediately following the primary hazard class or division number regardless of whether the subsidiary hazard(s) is listed in Column (6) of the HMT. Therefore, in this final rule, we are adopting the revisions to § 172.202(a)(3) as proposed.

We are also revising paragraph (a)(4) to clarify that the packing group is not required to be indicated on a shipping paper for explosives, self-reactive substances, batteries other than those containing sodium, and organic peroxides in addition to entries that are not assigned a packing group. In addition, we also are revising paragraph (a)(6) to clarify that for all articles where “No Limit” is shown in Column (9A) or (9B) of the HMT, the quantity must be the gross mass, followed by the letter “G.” We received no comments opposing these proposals; therefore, in this final rule, we are revising paragraph (c) to include a similar exception.

Section 172.322

Section 172.322 specifies marking requirements for vessel transportation of each non-bulk packaging and bulk packaging that contains a marine pollutant. In this final rule, we are adopting the new marking for marine pollutants that has been incorporated into the IMDG Code.

We received one comment [DGAC] indicating a difference between our proposal and the UN Recommendations regarding types of packaging for which the marine pollutant marking is not required. DGAC notes, “...[t]he proposal is to except combination packagings whereas the [UN Recommendations] excepts all packagings with a capacity of 5 L or 5 kg.”

We agree with DGAC that the exception applies to both single and combination packagings containing marine pollutants. Therefore, in this final rule, we are revising the amendment to state that for packages containing marine pollutants, the marine pollutant mark is not required on single packagings or combinations packagings with a net capacity

of 5 L or less for liquids or 5 kg or less for solids. We are requiring use of this new marking one year after publication of the final rule.

Section 172.400a

Section 172.400a establishes exceptions for labeling requirements. Currently, the UN Recommendations do not require a package labeled with a Division 4.2 label to bear a Division 4.1 subsidiary hazard label. This is primarily because the Division 4.2 label communicates a more severe spontaneously combustible flammability hazard and as such the Division 4.1 label is not considered to provide additional hazard communication value.

Section 172.401

Section 172.401 establishes specific requirements for prohibited labeling. We received a petition (P-1494) from DGAC requesting that PHMSA specify that pictograms described in the United Nations Globally Harmonized System of Classification and Labelling are not prohibited under the HMR. In its petition, DGAC states that the UN Economic and Social Council's Committee of Experts on the Transport of Dangerous Goods and on the GHS established the goal of implementing the GHS in 2008. DGAC contends that to facilitate international trade, it is important that packages bearing GHS pictograms are acceptable for transportation in the U.S. DGAC also states that GHS pictograms may already appear on packages used in transportation and cites Annex 7 of the GHS showing examples of GHS pictograms appearing on drums. Pictograms prescribed by GHS are not identical to labels required under the UN Recommendations

or the HMR; such pictograms typically consist of a red bordered diamond with a hazard symbol such as a “flame” or a “skull and cross bones.” DGAC expects these GHS pictograms to be smaller in size than the transport labels required under the HMR and international regulations.

We received no comments on our proposal to permit use of the GHS pictograms. Therefore, in this final rule, we are amending § 172.401 which prohibits the transportation of packages bearing any mark or label that could be confused or conflict with a label required under the HMR, to specify that restrictions under this section do not apply to packages labeled in conformance with the GHS.

Section 172.446

Section 172.446 specifies the requirements for Class 9 labels. Unlike the HMR, the international regulations do not have a solid horizontal line dividing the lower and upper half of the Class 9 label. The Class 9 label in § 172.446 depicts a solid horizontal line. For consistency with international regulations and to provide relief to the regulated community, in this final rule, we are revising paragraph (b) to allow a solid horizontal line as an option.

Section 172.448

Section 172.448 establishes the specifications for the “CARGO AIRCRAFT ONLY” label. For consistency with international regulations, we are replacing the current label. The symbol of this label is not altered; however the text is revised to read, “Forbidden in Passenger Aircraft.” In addition, we are authorizing continued use of the

current label until January 1, 2013.

Part 173

Section 173.4, 173.4a, 173.4b

Section 173.4 establishes the requirements for exceptions to the HMR for small quantities of Class 3, Division 4.1, Division 4.2 (PG II and III), Division 4.3 (PG II and III), Division 5.1, Division 5.2, Division 6.1, Class 7, Class 8, and Class 9 materials. Recently, provisions for the transport of hazardous materials in excepted quantities were incorporated into the UN Regulations and the IMDG Code. These provisions are based largely on existing excepted quantity provisions provided by the ICAO TI. The provisions permit certain small quantities of hazardous materials to be transported with minimal regulation, but ensure a high level of safety through stringent packaging and testing requirements.

The excepted quantity provisions in the UN Regulations and the small quantity provisions of the HMR are similar, but not identical. For example, differences include variations in the authorized hazard classes and packing groups; differences in the quantities authorized per package; and differences in marking, documentation and incident reporting requirements. We believe that aligning the existing small quantity provisions in the HMR with the excepted quantity provisions for air and vessel transportation will enhance harmonization and increase safety. Therefore, for consistency with the UN Recommendations and to increase safety and facilitate international transportation, we are adopting a new excepted quantity provision for transportation by aircraft and vessel into a new § 173.4a. We stress that we are not

removing the existing small quantity provisions in 173.4, but rather limiting the use of these provisions to domestic highway and rail transportation. We also are moving the exception for small quantities—less than 1 gram for solids and less than 1 milliliter for liquids per inner packaging currently found in § 173.4(e)—to a new § 173.4b. This will align the requirements of the HMR with those of the ICAO TI and the IMDG Code for transport by air and vessel, while maintaining the existing small quantity exceptions for domestic highway and rail transport. However in this final rule we are not applying the full training requirements of Part 172 Subpart H to excepted quantities. Instead we are requiring that persons who offer or transport excepted quantities be familiar with the requirements of 173.4a. Small quantity exceptions are separated into the following three sections:

- (1) Section 173.4 for small quantities transported by domestic highway and rail only;
- (2) Section 173.4a for excepted quantities transported by aircraft and vessel; and
- (3) Section 173.4b for de minimis quantities of material (less than 1 gram for solids and less than 1 milliliter for liquids per inner packaging) transported by all modes.

In the NPRM, we solicited comments regarding the potential for confusion and any cost impacts resulting from this change. One commenter [DGAC] indicates the proposed method is complex and unduly restrictive. DGAC notes, “...that for the most part the excepted quantity requirements mirror the existing requirements in § 173.4(a)” and “...[f]urther, the proposal is disruptive to multimodal consistency with one set of requirements...applicable to land transport and the other applicable to air and sea

transport.” Additionally, DGAC indicates that the new § 173.4a is more restrictive than current § 173.4 and sees no safety basis for imposing these additional restrictions.

DGAC recommends against incorporating the excepted quantities directly into the HMR but rather to allow domestic transport of excepted quantities under the ICAO TI or IMDG Code in accordance with authorizations provided in Subchapter C of Part 171 and recommends revising § 173.4(a)(10) by adding an alternative to allow transport of small quantities of hazardous materials in accordance with excepted quantities provisions in the ICAO TI.

Another commenter [API] notes that Special Provision A59 continues to reference § 173.4 even though the section is no longer applicable to transport by aircraft. Special Provision A59 allows devices containing ethylene oxide to be transported by aircraft in accordance with packaging provisions in § 173.4. API recommends PHMSA revise the language in Special Provision A59 to reference new § 173.4a for excepted quantities which is applicable to air transport. API notes this would be consistent with ICAO TI Special Provision 131 which allows devices containing ethylene oxide to be transported in accordance with “excepted quantities” provisions. We agree. In this final rule, we are revising Special Provision A59 to reference the excepted quantities packaging requirements in § 173.4a. We are also making several additional conforming amendments to other provisions in the HMR to reflect the new § 173.4a. The sections we are revising are as follows:

- § 172.102, Special Provisions 136, A59, A60;
- § 172.402(d)(1);
- § 172.500(b)(5);

- § 173.24(c)(2); and
- § 175.700(a).

Finally, UPS is concerned that the one-year transition period prior to prohibiting the air transport of packages of small quantities in conformance with § 173.4 is insufficient. UPS indicates, "...This will be a very hard transition for air carriers to enforce, as the current package marking for a Small Quantity shipment... does not stand out, and therefore cannot easily be identified and rejected by package handlers." UPS adds that it anticipates shippers will continue to transport small quantities domestically by air according to current § 173.4 beyond the transition date after which shippers would be required to conform with § 173.4a. UPS recommends that PHMSA allow the air transport of small quantities in conformance with § 173.4 for a period of several years to allow for transport of packages filled prior to the January 1, 2009 effective date until they are used up. We disagree. The current provisions of § 173.4 require a marking certifying conformance with the section. This certification requirement signifies knowledge of the requirements of the section even though training is not prescribed. We expect shippers benefiting from the exceptions provided in § 173.4 to take steps to ensure awareness of any changes that may be made to the requirements of the section and to respond accordingly, just as we would expect air carriers to be diligent in their acceptance practices with regard to small quantities prepared under § 173.4 even though training is not required. We believe a one-year transition period is sufficient for air shippers and air carriers to make necessary changes and conform to the revised requirements of § 173.4. Therefore, in this final rule, we are not revising the transition date for small quantities transported in accordance § 173.4. However, we are revising the certification marking in

§ 173.4(a)(10) to communicate that the packages prepared in conformance with the section may only be transported domestically by highway or rail. Also, to further clarify, where domestic transport by highway or rail is impractical, materials must be transported in conformance with the requirements for excepted quantities in § 173.4a.

Two commenters [DGAC, FCC] express disappointment that we did not include fuel cell cartridges as part of the small quantity exceptions in § 173.4. FCC notes, "... We see no safety basis for precluding use of the small quantity exception provision for fuel cells..." Both DGAC and FCC recommend not adopting this amendment. While we considered extending the allowance for fuel cell cartridges to the excepted quantity provisions this would create a confusing inconsistency with the ICAO TI. Fuel cell cartridges by design offer a high degree of integrity and may contain a relatively small amount of hazardous material. Therefore, we believe the relative hazard associated with surface transportation of these materials is minimal. In this final rule we will permit fuel cell cartridges to be transported by highway or rail in accordance with the small quantity exceptions in § 173.4.

One commenter [UPS] notes a concern that packages of materials shipped as de minimus quantities could be misunderstood as undeclared shipments by carriers processing damaged or stray packages. UPS recommends that PHMSA require a marking on the package to certify conformance with the de minimus exceptions section. We disagree. Based on our determination that de minimus materials do not pose an unreasonable risk to health and safety or property, we do not believe a hazard communication marking is necessary. Therefore, in this final rule, we are adopting the new § 173.4b as proposed.

Sections 173.12 and 173.134

Section 173.12 establishes exceptions for shipments of waste materials. Section 173.134 establishes definitions, classification criteria, and exceptions for Division 6.2 materials (infectious substances). Under the Docket HM-218D final rule, we added a new paragraph (f) in § 173.12 to specify that household waste, as defined in § 171.8, is not subject to the HMR. In addition, we revised a household waste exception in § 173.134(b)(13)(i) to reference the household waste definition in § 171.8. Upon publication of the final rule, we received a comment expressing concern with the implementation of these amendments. One commenter [Regulatory Resources Inc.] expresses concern that this amendment was too broad and would allow entities such as large hotels undergoing renovation to offer their waste, including hazardous materials, for transportation as non-regulated materials. This was not our intention. In an effort to reduce confusion, we are revising these two sections to specify that household waste is not subject to the HMR when transported in accordance with applicable state, local, or tribal requirements.

Section 173.24b

Section 173.24b establishes additional general requirements for bulk packagings. In this final rule, we are adding a new paragraph to clarify that IBCs and Large Packagings that are not designed and tested for stacking may not be stacked during transportation. In addition, we are clarifying that IBCs and Large Packagings that are intended for stacking may not have more weight superimposed upon them than is marked on the packaging.

Section 173.62

Section 173.62 establishes specific packaging requirements for explosives. We received a petition (P-1505) from the Sporting Arms & Ammunition Manufacturers' Institute (SAAMI) requesting that PHMSA include a new proper shipping name "Powder, smokeless," UN0509, in the § 172.101 HMT and add the new entry to the explosives assigned Packaging Instruction 114(b) in § 173.62. In its petition, SAAMI states that the UN Sub-Committee of Experts (UNSCOE) on the Transport of Dangerous Goods adopted a proposal by SAAMI to add the new entry to its Dangerous Goods List and a related change to the packing provisions in the UN Recommendations.

Typically, we harmonize with the UN following the formal adoption of a proposal into the published version of the UN Recommendations. However, because of the limited scope of this amendment and because the new entry allows for a more accurate classification of smokeless powder, we are amending § 173.62 to include a new entry UN0509 to the Explosives Table, which specifies the Packing Instruction assigned to each explosive, and adding a reference to the new entry in Packing Instruction 114(b). We also are including a "D" in column 1 of the table entry to designate that the entry is appropriate for domestic use but may not be appropriate for international transportation. Following the adoption of the entry within the IMDG Code and the ICAO TI, this indication would no longer be necessary. It is our intention to remove the "D" in a future rulemaking consistent with the adoption of the entry within the aforementioned international regulations.

Additionally, consistent with our addition to add new entry "1-Hydroxybenzotriazole, anhydrous, dry or wetted with less than 20% water, by mass,"

Division 1.3C, UN0508, to the HMT, we are adding this material under Packing instruction “114(b).” We are revising this instruction to specify that, for UN0508, inner packagings are not required if drums are used as the outer packaging. We also are adding a new sentence under Packing instruction 114(b) to prohibit metal packagings for UN0508. In addition, we are clarifying that inner packagings are not necessary if drums are used as the outer packaging for UN0160 and UN0161.

Section 173.115

The HMR define a Division 2.2 material (non-flammable, nonpoisonous compressed gas—including compressed gas, liquefied gas, pressurized cryogenic gas, compressed gas in solution, asphyxiant gas and oxidizing gas) as any material or mixture that “exerts in the packaging an absolute pressure of 280 kPa (40.6 psia) or greater at 20 °C (68 °F), or is a cryogenic liquid, and does not meet the definition of Division 2.1 or 2.3.” Recently, the definition of Division 2.2 gases in the UN Recommendations was amended to include all liquefied gases, irrespective of their pressure. This amendment was made on the basis that certain liquefied gases that pose no pressure hazard at ambient pressures and temperatures may exhibit a pressure hazard under conditions normally encountered in transport, such as increased temperature. In addition, the pressure of a Division 2.2 gas was amended to be 200 kPa gauge (29 psig). In order to enhance safety and to maintain global uniformity with respect to the classification of Division 2.2 gases, we are adopting these amendments. With respect to the revised pressure limit, for the convenience of the reader the pressure is now expressed as both gauge pressure and absolute pressure. In order to enhance safety and to maintain global uniformity with

respect to the classification of Division 2.2 gases, we are adopting these amendments. Additionally, we are re-designating current paragraph (k) as a new paragraph (l). The new paragraph (k) would read “For Division 2.2 gases, the oxidizing ability shall be determined by tests or by calculation in accordance with ISO 10156:1996 and ISO 10156-2:2005 (IBR, see § 171.7 of this subchapter.)” This revision requires the use of specific test and calculation methods for a more accurate determination of the oxidizing ability of Division 2.2 gases. Additionally, we are revising § 171.7 to incorporate these ISO standards.

Section 173.137

Section 173.137 establishes packing group criteria for corrosive (Class 8) materials. In this final rule, we are adding a note to clarify that an additional test on the second material is not required when the initial test on either steel or aluminum indicates the material is corrosive.

Sections 173.162, 173.164, 173.166, 173.186, 173.306, and 173.307.

The ICAO TI recently adopted new amendments to require additional information to be included on the air waybill for certain hazardous materials. Currently, a number of hazardous materials are excepted from the full regime of the hazard communication requirements that generally apply to the transport of hazardous materials in the ICAO TI when certain conditions are met to ensure an appropriate level of safety. An example is articles containing not more than 100 mg of mercury, gallium or an inert gas, which are excepted if certain conditions specified in Special Provision A69 of the ICAO TI are met.

Frequently, the ICAO TI contain more restrictive or additional requirements and conditions that apply for air transportation. The special provisions that address these requirements contain packaging provisions, prohibitions, and exceptions from requirements for particular quantities or forms of materials. To enable air carriers to ascertain that a shipment conforms to applicable requirements, in the July NPRM, we proposed to adopt a number of amendments consistent with recently adopted amendments in the ICAO TI. Specifically we proposed to require the shipper to include on the air waybill accompanying a shipment an indication that a hazardous material or article has met the applicable conditions for transport. We stated that this indication would allow freight forwarders and operators to verify that the shipper is aware of, and has complied with, the applicable regulatory requirements. Additionally, we stated that it would reduce the likelihood of unnecessary carrier delays through improved communication.

As discussed earlier in this preamble, a number of commenters oppose this proposal. For example, commenters oppose the certification provisions because the HMR do not specifically require an air waybill and express concern that the proposed certification requirement means that all air shipments must now be accompanied by a waybill. Commenters also note that use of an air waybill is not standard across the air carrier industry, and that the industry is moving towards a paperless system for shipments. In addition, commenters state that in many cases the carrier or the freight forwarder prepares the air waybill; these commenters thus disagree with PHMSA's premise that including certification on an air waybill allows a carrier or freight forwarder to verify that the shipper has complied with applicable requirements. Commenters also

suggest that we significantly under-estimated the paperwork burden that would result from implementation of the proposed certification requirement.

Based on our review of comments and on past history of safe transportation of these excepted materials, in this final rule, we are not adopting the requirement as proposed. We will continue to review the merits of the proposal and may reconsider the proposed amendments or a similar revised amendment for a future rulemaking.

Section 173.168

Section 173.168 establishes the requirements for the transportation of chemical oxygen generators. A chemical oxygen generator that is transported with a means of initiation attached must be approved prior to shipment. This approval requirement applies to chemical oxygen generators with either an explosive or non-explosive means of initiation attached. As currently drafted, it appears that the requirement to obtain an approval applies only to oxygen generators with an explosive means of initiation. In this final rule, we are revising paragraph (a) to clarify the approval requirements for a chemical oxygen generator.

Section 173.196

Section 173.196 establishes packaging requirements for Category A infectious substances. In this final rule, we are revising paragraphs (a)(1) and (a)(2) by replacing the word “watertight” with “leakproof.” These proposed revisions are consistent with international regulations. No substantive changes to the packaging requirements are intended by this wording change.

Section 173.206

In this final rule, we are adding a new packaging section (§ 173.206) to the HMR to harmonize with new packaging requirements for water-reactive chlorosilanes adopted in the Fifteenth revised edition of the UN Recommendations. The enhanced packaging requirements more adequately address the water-reactive properties of these materials. We are also evaluating whether packaging for other water-reactive materials should also be enhanced. Depending on the outcome of our evaluation, we may propose further amendments to the UN Recommendations and the HMR. In the meantime, the entries affected by the addition of new packaging § 173.206 are as follows:

UN1724	Allyltrichlorosilane, stabilized
UN1728	Amyltrichlorosilane
UN1747	Butyltrichlorosilane
UN1753	Chlorophenyltrichlorosilane
UN2986	Chlorosilanes, corrosive, flammable, n.o.s.
UN2987	Chlorosilanes, corrosive, n.o.s.
UN2985	Chlorosilanes, flammable, corrosive, n.o.s.
UN3362	Chlorosilanes, toxic, corrosive, flammable, n.o.s.
UN3361	Chlorosilanes, toxic, corrosive, n.o.s.
UN1762	Cyclohexenyltrichlorosilane
UN1763	Cyclohexyltrichlorosilane
UN2434	Dibenzylchlorosilane
UN1766	Dichlorophenyltrichlorosilane
UN1767	Diethyldichlorosilane

UN1162	Dimethyldichlorosilane
UN1769	Diphenyldichlorosilane
UN1771	Dodecyltrichlorosilane
UN2435	Ethylphenyldichlorosilane
UN1196	Ethyltrichlorosilane
UN1781	Hexadecyltrichlorosilane
UN1784	Hexyltrichlorosilane
UN2437	Methylphenyldichlorosilane
UN1250	Methyltrichlorosilane
UN1799	Nonyltrichlorosilane
UN1800	Octadecyltrichlorosilane
UN1801	Octyltrichlorosilane
UN1804	Phenyltrichlorosilane
UN1816	Propyltrichlorosilane
UN1298	Trimethylchlorosilane
UN1305	Vinyltrichlorosilane, stabilized

Section 173.222

Section 173.222 specifies the requirements for dangerous goods in machinery or apparatus. Paragraph (c) of this section specifies the total net quantity limits contained in one item of machinery or apparatus. Consistent with the ICAO TI, we are revising this section to prohibit Division 2.2 gases with subsidiary risks and refrigerated liquefied gases for transportation by aircraft as dangerous goods in machinery or apparatus.

Section 173.225

Section 173.225 specifies packaging requirements and other provisions for organic peroxides. When the § 172.101 table specifies this section, the organic peroxide must be packaged and offered for transportation in accordance with the provisions of this section. Each packaging must also conform to the general requirements of Subpart B of Part 173 and to the applicable requirements of Part 178 of the HMR. Specifically, organic peroxides that require temperature control are subject to § 173.21(f). When an IBC or bulk packaging is authorized and meets the requirements of paragraph (f) or (h) of § 173.225, respectively, lower control temperatures than those specified for non-bulk packaging may be required. An organic peroxide not identified in paragraph (c), (e), or (g) of § 173.225 by technical name, or not assigned to a generic type in accordance with paragraph (b)(3) of this section, must conform to the requirements in paragraph (c) of § 173.128.

The Organic Peroxides Table specifies by technical name those organic peroxides that are authorized for transportation and not subject to the approval provisions of § 173.128. An organic peroxide identified by technical name is authorized for transportation only if it conforms to all applicable provisions of the table. In this final rule, we are amending the Organic Peroxides Tables by adding new entries, revising current entries, and adding new Notes “29,” “30,” and “31” following the Organic Peroxides Table. New Note “29” indicates that specific entries are not subject to the requirements of this subchapter for Division 5.2. New Notes “30” and “31” indicate that for specific entries, organic peroxides with a boiling point greater than 130 °C (266 °F) or

available oxygen less than or equal to 6.7% are acceptable. We are also adding new entries to the Organic Peroxide IBC Table in paragraph (e) of this section.

The following entries in the Organic Peroxides Table are being amended:

- UN3101 tert-Amyl peroxy-3,5,5-trimethylhexanoate
- UN3117 Di-(2-ethylhexyl) peroxydicarbonate [as a stable dispersion in water]

The following entries are added to the Organic Peroxides Table:

- UN3119 tert-Amyl peroxyneodecanoate
- UN3119 tert-Amyl peroxy-pivalate
- UN3106 tert-Butyl peroxy 3,5,5-trimethylhexanoate
- UN3115 Cumyl peroxyneodecanoate
- Exempt Cyclohexanone peroxide(s)
- UN3105 2,2-Di-(tert-amylperoxy)-butane
- Exempt Dibenzoyl peroxide
- UN3109 tert-Butyl peroxybenzoate
- UN3103 1,1-Di-(tert-butylperoxy)-cyclohexane
- UN3109 1,1-Di-(tert-Butylperoxy) cyclohexane
- UN3105 1,1-Di-(tert-butylperoxy)-cyclohexane + tert-butylperoxy-2-ethylhexanoate
- Exempt Di-(2-tert-butylperoxyisopropyl) benzene(s)
- UN3103 1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane
- UN3118 Di-2,4-dichlorobenzoyl peroxide

Exempt	Di-4-chlorobenzoyl peroxide
Exempt	Dicumyl peroxide
UN3119	Di-(2-ethylhexyl) peroxydicarbonate [as a stable dispersion in water]
UN3119	Di-(2-neodecanoyl-peroxyisopropyl) benzene, as stable dispersion in water
UN3115	3-Hydroxy-1,1-dimethylbutyl peroxyneodecanoate
UN3117	3-Hydroxy-1,1-dimethylbutyl peroxyneodecanoate
UN3119	3-Hydroxy-1,1-dimethylbutyl peroxyneodecanoate [as a stable dispersion in water]
UN3109	Methyl isopropyl ketone peroxide(s)
UN3107	3,3,5,7,7-Pentamethyl-1,2,4-trioxepane

A new Note “30” is added following the Organic Peroxides Table to read:
“Diluent type B with boiling point > 130 °C (266 °F).”

A new “Note “31” is added following the Organic Peroxides Table to read:
“Active oxygen ≤ 6.7%.”

The following entries are being revised or added to the Organic Peroxide IBC
Table as follows:

UN3109	tert-Butyl peroxybenzoate, not more than 32% in diluent type A
UN3109	1,1-Di-(tert-Butylperoxy) cyclohexane, not more than 37% in diluent type A

- UN3119 tert-Amyl peroxyvalate, not more than 32% in diluent type A
- UN3119 tert-Butyl peroxyneodecanoate, not more than 52%, stable dispersion, in water
- UN3119 Di-(2-neodecanoylperoxyisopropyl) benzene, not more than 42%, stable dispersion, in water
- UN3119 3-Hydroxy-1,1-dimethylbutyl peroxy-neodecanoate, not more than 52%, stable dispersion, in water

In addition, in the Organic Peroxide Portable Tank Table, UN3119 “Di-(3,5,5-trimethyl-hexanoyl) peroxide, not more than 38% in diluent type A” is being revised, and UN3119 “tert-Amyl peroxyneodecanoate, not more than 47% in diluent type A” is being added as a new entry.

Section 173.226

Section 173.226 establishes non-bulk packaging requirements for Division 6.1 PG I, Hazard Zone A materials. In this final rule, we are editorially revising paragraph (c) to enhance accuracy, reduce misunderstanding, and provide a more user-friendly format.

Section 173.230

Currently § 173.230 provides regulations for the transportation of fuel cell cartridges containing flammable liquids. As portable electronic devices continue to evolve, developers of fuel cell cartridge technologies are considering various types of fuel sources to meet increasing power demands. Provisions addressing these other fuel

types have already been adopted in the Fifteenth revised edition of the UN Recommendations, the ICAO Technical Instructions and the IMDG Code. Additionally, we received petitions from HMT, L.L.C (P-1517) and the U.S. Fuel Cell Council (P-1518) requesting that we align the HMR provisions for fuel cell systems and cartridges with international standards. Consistent with several of PHMSA's strategic goals of ensuring safety and advancing technology solutions to support energy independence and environmental protection, we are adding four new proper shipping names to the HMT to describe the range of fuel used in fuel cell cartridges: "Water-reactive substances," UN3476; "Corrosive substances," UN3477; "Liquefied flammable gas," UN3478; and "Hydrogen in metal hydride," UN3479. These additions will provide guidance for the safe transportation of fuel cells and will introduce a greater variety of technology into the global market place.

The type of hazard would not be included in the proper shipping name but, instead, would be identified by the hazard class or division (e.g., 2.1; 3; etc.). Readers should note that liquefied flammable gases and hydrogen in a metal hydride are both Division 2.1 materials used in fuel cell cartridges. However, the provisions necessary for the safe transportation of these articles are quite different and therefore, it is necessary to distinguish them with separate shipping descriptions. In addition, because fuel cell cartridges may contain hazardous materials of different hazard classes, we are revising § 173.230 to provide a comprehensive section to address the requirements for all fuel cell cartridges containing hazardous materials as fuel. In addition, consistent with the ICAO Technical Instructions, in § 175.10, we are expanding the types of fuel cell cartridges permitted in carry-on baggage by airline passengers and crew members to include water-

reactive substances and hydrogen in a metal hydride. Fuel cell cartridges permitted for transport by passengers and crew members must continue to conform to certain rigorous performance criteria outlined in § 175.10.

One commenter [HMT] requests that we adopt the definition of fuel cell cartridge or fuel cartridge provided in the Fifteenth edition of the UN Model Regulations. The commenter notes that the current definition for fuel cell cartridge or fuel cartridge adopted in a separate final rule (Docket No. HM-243; 73 FR 23362; April 30, 2008) does not align with the definition provided in the UN Model Regulations. The commenter further states that the definition currently provided in § 171.8 would limit fuel cells to those for micro power units and would prohibit fuel cells from being refilled by the user. The commenter states that most hydrogen in metal hydride fuel cell cartridges are intended to be filled by the user and fuel cell cartridges intended for military and industrial applications would be excluded from the current definition of fuel cell cartridge or fuel cartridge.

We agree with the commenter. The definition in the Fifteenth edition of the UN Recommendations provides an adequate definition of fuel cell cartridges and addresses the various applications of this technology. Therefore, in this final rule we are revising the definition in § 171.8 for fuel cell cartridge or fuel cartridge consistent with the definition provided in the Fifteenth edition of the UN Recommendations.

Two commenters [HMT, FCC] request that we remove the phrase “be free of electric charge generating components” from the last sentence of paragraph (a). The commenters correctly note this phrase was removed from the Fifteenth edition of the UN Recommendations when provisions for fuel cell cartridges were expanded to fuels other

than flammable liquids. HMT suggests the meaning of the requirement is unclear and appears to have little relevance to fuel cell cartridges containing non-flammable fuels. We agree with the commenters. The regulations pertaining to fuel cell cartridges should be clear, enforceable and consistent with international standards to the extent possible. Therefore, in this final rule we are removing the phrase “be free of electric charge generating components” from paragraph (a).

Paragraph (d) outlines additional requirements and tests for fuel cell cartridges containing hydrogen in a metal hydride. HMT suggests several editorial revisions to the proposed language in paragraph (d) for consistency with the Fifteenth edition of the UN Recommendations. We agree; these are minor revisions and will provide greater clarity to the regulations. Specifically, in this final rule we are clearly distinguishing between design qualification tests and production tests and correcting various figures and units of measure.

Paragraph (e) describes the various package configurations authorized for the transport of fuel cell cartridges. One commenter [FCC] suggests several revisions to this paragraph for consistency with the UN Recommendations and the ICAO Technical Instructions. We agree with the commenter and in this final rule we are revising paragraph (e)(2) to be consistent with the UN Recommendations and the ICAO Technical Instructions.

Paragraph (f) outlines additional requirements for the transportation of fuel cell cartridges by aircraft. HMT and FCC note that the proposed paragraph (f)(3) is inconsistent with the ICAO Technical Instructions and request we clarify our intent to only require fuel cell cartridges and fuel cell systems to comply with IEC PAS 62282-6-1

Ed. 1 when contained in equipment. We agree with the commenters and are revising this paragraph consistent with the 2009-2010 edition of the ICAO Technical Instructions.

Paragraphs (f)(4) and (f)(5) apply to fuel cells cartridges packed with equipment. One commenter, [HMT] requests we combine paragraphs (f)(4) and (f)(5) for clarity since both paragraphs apply to fuel cells cartridges packed with equipment. While we agree with the commenter, we do not see a reason to restate requirements in paragraph (f)(4) that are already stated in paragraph (e)(2)(i). In this final rule we are deleting the proposed paragraph (f)(4) and the proposed (f)(5) is now (f)(4). In addition, we are reordering the remaining paragraphs appropriately.

The ICAO Technical Instructions contain additional provisions applicable to fuel cell cartridges containing Division 4.3 and Class 8 material. This provision restricts the mass of each fuel cell cartridge to 1.0 kg (2.2 lbs.) Although this requirement was not proposed, it is our intention to harmonize to the extent possible with the ICAO Technical Instructions. Therefore, in this final rule, we are adding this requirement to paragraph (f)(7) of this section.

Paragraph (f)(8) states fuel cell cartridges intended for transport in carry-on baggage must also meet the applicable provisions of § 175.10. HMT requests that we revise paragraph (f)(8) to specify only the requirements of paragraphs (a) through (d) apply in this case since the additional requirements of paragraphs (e) and (f) would preclude a passenger from using a fuel cell while on board an aircraft. We agree with the commenter. The provisions outlined in this section and § 175.10 are intended to permit passengers to safely carry on and use fuel cell cartridges consistent with their intended use onboard aircraft. In this final, rule we are revising paragraph (f)(8) to specify fuel

cell cartridges carried by aircraft passengers or crewmembers are subject to paragraphs (a) through (d) of this section and the applicable provisions of § 175.10.

Paragraph (g) provides limited quantity exceptions for fuel cell cartridges. In the NPRM, we proposed to limit the amount of fuel permitted in the fuel cell cartridge by limiting the capacity of the reservoir in the fuel cell cartridge. This is consistent with other limited quantity exceptions outlined in §§ 173.150 through 173.154 that limit the size of inner packagings. HMT notes that the UN Model Regulations specify an authorized quantity limitation based on the maximum quantity of fuel per cartridge. The commenter requests we revise the limited quantity exceptions in this paragraph to minimize the amount of hazardous materials contained in the cartridge consistent with the UN Recommendations. Although this change would permit slightly more hazardous material in a fuel cell cartridge for fuel cell cartridges containing a Class 3, Division 4.3 or Class 8 material, we believe the additional risk associated with this change would be negligible, considering the robust nature of fuel cell cartridges and the design type and production testing that must be conducted prior to offering fuel cell cartridges for transportation. We agree with the commenter, and in this final rule, we are revising paragraphs (g)(1), (2) and (3) to express the quantity limitations based on the quantity of liquid or solid fuel contained in the article.

Section 173.304(b)

Section 173.304(b) specifies additional requirements for liquefied compressed gases in UN pressure receptacles. In a final rule published on June 12, 2006, under Docket PHMSA-2005-17463 (HM-220E) entitled “UN Cylinders,” (71 FR 33858), we

adopted the filling limits for liquefied compressed gases and mixtures in UN pressure receptacles specified in the UN Recommendations. Based on a review of the P200 filling limits, we lowered the filling limits for ten gases and added a table under paragraph (c) in § 173.304b to specify the revised filling limits. The UN Recommendations subsequently adopted these revised filling limits. Since there is no longer a need for the revised filling limits for liquefied compressed gases in the HMR, in this final rule, we are removing paragraph (c) of § 173.304b in its entirety. Current paragraphs (d) and (e) are being re-designated accordingly.

Section 173.306

Section 173.306 establishes transportation requirements for limited quantities of compressed gases. The ICAO TI have incorporated provisions for the transportation of limited quantities of compressed gases in inner nonrefillable plastic receptacles to keep abreast with new technology and on the basis that inner nonrefillable plastic receptacles provide a level of safety equivalent to other authorized packagings. Although the HMR do not currently allow the transportation of these plastic receptacles by air, PHMSA has issued several Special Permits authorizing such transportation with certain restrictions, such as shipping paper, labeling, marking, and packaging requirements. We have reviewed these materials from a risk/safety perspective, and based on an equivalent level of safety determination established by the Special Permits, and a record of the safe transportation of plastic receptacles, we are adopting requirements for the construction and use of plastic containers within the HMR. We believe this amendment will also enhance international harmonization and provide relief to the regulated community by

reducing the need for Special Permits to transport these materials. A new aerosol container specification “2S” is included in § 173.306, with corresponding requirements as detailed in a new § 178.33b. One commenter [P&G] expresses support for the allowance of limited quantities of Division 2.2 materials with no subsidiary hazard to be transported in plastic containers and also provides recommendations for the testing and material requirements of these packagings [See discussion under § 178.33b]. The same commenter [P&G] suggests alternatives to the hot water bath tests for leak detection for both plastic and metal aerosol containers. Specifically, the commenter requests that we modify the hot water bath test protocol to permit a reduction in temperature if the receptacles are made of a plastic material that softens at higher temperatures. As noted in the NPRM, we proposed to add § 173.306(a)(5) to allow an alternative hot water bath test for aerosol dispensers made of plastic materials which soften at higher temperatures. We received no additional comments opposing this proposal; therefore, in this final rule, we are adopting this proposal without change.

We are also revising paragraph (j) to require the consignor to include on an air waybill or other shipping documentation an indication that a hazardous material or article has met the applicable conditions for air transport. This indication will allow freight forwarders and operators to verify that the consignor is aware of, and has complied with, the applicable regulatory requirements.

Section 173.307

Section 173.307 specifies exceptions for compressed gases. The ICAO TI have Special Provision (A69) excepting from regulation articles containing minimal amounts

of gallium, mercury, or inert gas. Based on a review that indicated the special provision was not assigned appropriately among all inert gases, ICAO proposed to assign the special provision to all the inert gases concerned. The HMR do not currently have a similar provision for inert gases, although the HMR have the same exception for articles containing gallium or mercury in §§ 173.162 and 173.164, respectively. Rather than adding a new special provision, we are adding to this section a general exception for articles containing inert gas. This exception specifies that manufactured articles or apparatuses, each containing not more than 100 mg of inert gas and packaged so that the quantity of inert gas per package does not exceed 1 g, are not subject to the HMR.

Section 173.322

Section 173.322 establishes specific packaging requirements for ethyl chloride (UN1037). Recently, PHMSA became aware of an incident involving an aluminum compressed gas cylinder containing ethyl chloride. The investigation of this incident suggests the possibility that a reaction occurred within the aluminum cylinder as a result of the incompatibility between the ethyl chloride gas and the aluminum cylinder. The HMR currently prohibit the transportation of ethyl chloride in UN pressure receptacles constructed of aluminum alloy but have no such prohibition for specification cylinders. To address this occurrence, in this final rule, we are revising this section to prohibit the filling of specification cylinders made of aluminum alloy (e.g., DOT 3AL) with ethyl chloride.

Part 175

Section 175.10

Section 175.10 establishes exceptions for the transportation of certain hazardous materials by aircraft, including hazardous materials that may be carried by passengers or crewmembers in checked or carry-on baggage. In this final rule, we are revising the exception for dry ice in paragraph (a)(10) to clarify that dry ice carried in both carry-on and checked baggage is subject to the approval of the aircraft operator.

We are also revising § 175.10(a)(15) to clarify that when the battery is disconnected, the battery terminals must also be protected to prevent short circuits. (See discussion under “Amendments to Enhance the Safe Transportation of Batteries and Battery-Powered Devices” of this rulemaking.) In addition, we are revising paragraph (a)(17) to § 175.10 to clarify that dry batteries not exceeding 9 volts are not subject to the requirements of the HMR, except incident reporting, when carried by aircraft passengers or crewmembers.

In response to the proposals in the NPRM pertaining to this section, one commenter [URS] points out a discrepancy in terminology in reference to exceptions for passengers, crewmembers, and air operators under § 175.10. URS notes that under § 175.10(a)(17), PHMSA uses the terminology “consumer electronic” to describe devices powered by lithium batteries carried on board an aircraft, whereas under revised § 175.10(a)(18), PHMSA use the terminology “portable electronic” to describe the same types of devices but powered by fuel cell cartridges and carried on board an aircraft. The commenter requests PHMSA replace “consumer electronic and medical” with “portable” for consistency between the two exceptions. We agree, and in this final rule, we are

revising § 175.10(a)(17) to indicate “portable electronic devices.”

As noted under the discussion in § 173.230, we are revising paragraph (a)(18) to expand the types of fuel cell cartridges permitted in carry-on baggage by airline passengers and crew. Fuel cell cartridges permitted for transport by passengers and crewmembers must continue to conform to the rigorous performance criteria outlined in § 175.10.

Finally, we are revising paragraph (a) and adding a new paragraph (c) to specify that the requirements to submit incident reports under §§ 171.15 and 171.16 of this subchapter apply to the air carrier.

Section 175.33

Section 175.33 establishes requirements for shipping papers and notification of pilot-in-command for hazardous materials transported by aircraft. We are adopting several amendments to strengthen and clarify these requirements, harmonize with international standards, and address a recommendation of the NTSB from a 2006 incident.

On February 7, 2006, United Parcel Service Company (UPS) flight 1307, landed at its destination, Philadelphia International Airport, after a cargo smoke indication in the cockpit. The crewmembers evacuated the aircraft upon landing and sustained minor injuries. The aircraft and most of the cargo, however, were destroyed. In its investigation of the incident, the NTSB determined that UPS personnel were able to retrieve the notice to captain (NOTOC), which contained information on the hazardous materials on board the airplane. However, NTSB also determined that personnel did not

provide emergency responders with detailed information about the hazardous materials on board the aircraft in a timely manner, and such a delay could have potentially created a safety hazard. As a result of its findings, NTSB recommended that PHMSA “require aircraft operators that transport hazardous materials to immediately provide consolidated and specific information about hazardous materials on board an aircraft, including proper shipping name, hazard class, quantity, number of packages, and location to on-scene emergency responders upon notification of an accident or incident.” (NTSB Recommendation A-07-106)

The HMR currently require aircraft operators to make available, upon request, to an authorized official of a Federal, State, or local government agency, including an emergency responder, at reasonable times and locations, the documents or information required by § 175.33, which include shipping papers and notification of pilot-in-command. However, aircraft operators are not required to provide hazardous materials information to emergency responders immediately upon notification of an accident or incident. We agree with NTSB that delays in the transmittal of information to emergency responders could delay timely and effective response to incidents. Therefore, in the NPRM, we proposed to revise paragraph (c)(4) of this section to require aircraft operators that transport hazardous materials to provide immediate and specific information about hazardous materials on board an aircraft, including proper shipping name, hazard class, quantity, number of packages, and location, to on-scene emergency responders in the event of an accident or incident.

One commenter [ALPA] does not support the proposal to require aircraft operators that transport hazardous materials to provide immediate and specific

information about hazardous materials on board an aircraft, including proper shipping name, hazard class, quantity, number of packages, and location, to on-scene emergency responders in the event of an accident or incident. ALPA states, "...we are concerned that the proposed wording in the current rulemaking effort is not specific enough in how the information is to be provided to first response personnel, or in what is considered immediate notification." ALPA expresses concern that operators will task a flight crew with providing the information on the NOTOC to emergency responders during an incident when the flight crew's focus should be on safely evacuating an aircraft. ALPA recommends that PHMSA require operators to find a method of providing the required information to emergency responders without involving the flight crew.

We acknowledge ALPA's concern with involvement of the flight crew and as indicated previously in the preamble to Docket HM-206C, in an emergency situation, retrieval of the information from the flight crew may not be practical during an in-flight emergency because the flight crew may be attending to more pressing tasks. However, we believe the method for providing immediate notification to emergency responders is best determined by the operators. Therefore, in this final rule, we are adopting the revision as proposed.

In response to a FedEx petition, [P-1490], in the NPRM, we also proposed to revise §175.33(a)(1)(i) to remove the requirement that the type of package must be included on the notification of pilot-in-command. Three commenters [FedEx, IPA, UPS] indicate support for our proposal to remove the requirement to include the type of packaging on the notification of pilot-in-command. One commenter [IPA] requests that PHMSA require special notice to the flight crew through the notification of pilot-in-

command any time cargo aircraft only hazardous material is loaded in an inaccessible location. We disagree. The notification of pilot-in-command requirements already require information on the loading location of packages aboard aircraft and confirmation that the package must be carried only on cargo aircraft if its transportation aboard passenger-carrying aircraft is forbidden, in § 175.75(a)(4) and (a)(9), respectively. We did not receive other comments opposing this proposal; therefore, in this final rule, we are removing the requirement as proposed.

In addition, for consistency with international regulations, in the NPRM, we proposed to add a new paragraph (a)(11) to specify that for “Carbon dioxide, solid (dry ice),” UN1845, only the UN number, proper shipping name, class, total quantity, exact location aboard the aircraft, and the airport at which the package(s) is to be unloaded need be provided.

Two commenters [Omni, UPS] express concern regarding the language provided in new paragraph (a)(11). Specifically, Omni, notes that “...In the proposed language to be added relative to UN1845...the aircraft operator is required to provide the exact location aboard the aircraft.” Omni requests clarification of the meaning of “exact location” because the language is not the same for the requirement to inform the pilot-in-command of the location of the packages aboard aircraft required for other hazardous materials, and urges PHMSA to remove the word “exact” from the requirement. UPS points out an inconsistency with the ICAO TI by indicating, “...ICAO has determined to allow the dry ice information to be aggregated for each hold in an aircraft, not just the loading position.” UPS recommends that PHMSA revise the language to be consistent with ICAO TI. The ICAO TI requires the “total quantity in each hold on the aircraft.”

This is different in meaning from the “exact location” as written in the NPRM in that, as UPS points out, an aircraft hold encompasses several loading locations.

We agree with the commenters, the use of the word “exact” is inconsistent with the provision to provide the location of packages under § 175.33(a)(4) and the provision for “dry ice” added to the ICAO TI. Therefore, we are revising the language by removing the word “exact” from paragraph (a)(11).

Another commenter [COSTHA] requests that we clarify paragraph (a)(11) to indicate the provision applies only when notification of pilot-in-command is required because not all shipments of “dry ice” are subject to the notification of pilot-in-command requirements (see § 172.217(c)(5)). We agree with the commenter that not all shipments of “dry ice” require notification, but we disagree that a clarifier is needed for new paragraph (a)(11). The paragraph (a) introductory text already indicates that the section applies to hazardous materials subject to the provisions of the HMR that are carried in an aircraft. If a shipment of dry ice is excepted from all other requirements of the HMR under § 173.217(c)(5), the shipper of dry ice does not need to consult § 175.33 for air shipping paper and notification of pilot-in-command requirements as these requirements no longer apply.

Section 175.75

Section 175.75 specifies the requirements for quantity limitations and cargo locations for hazardous materials transported by aircraft. With few exceptions, paragraph (d) requires each package containing a hazardous material acceptable only for cargo aircraft to be loaded in such a manner that a crew member or other authorized person can

access, handle and when size and weight permit, separate such packages from other cargo during flight. To increase flexibility in these stowage requirements, in the NPRM we proposed to expand this requirement to allow for the stowage of these materials in inaccessible cargo compartments, provided the compartment has an FAA-approved fire or smoke detection system and a fire-suppression system.

Five commenters [FedEx, IPA, NACA, Omni, UPS] support our proposal to allow the loading of cargo aircraft only hazardous materials in a cargo compartment that has an FAA-approved fire or smoke detection and a fire-suppression system. However, several commenters request clarification of the regulatory language and recommend revisions or additional changes. UPS is concerned that the proposed language to require an FAA-approved fire or smoke detection and a fire-suppression system is inconsistent with ICAO TI because it may allow for an FAA-approved system that is not identical to the certification requirements for a Class C compartment. The commenter notes “...In the Technical Instructions, the new provision will refer specifically to Class C compartments.” We disagree. The FAA defines a Class C cargo compartment as a compartment in which there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station and there is an approved built-in fire extinguishing or suppression system controllable from the cockpit. An FAA-approved system would be a system meeting the requirements for a Class C compartment as certified by FAA. Secondly, with regard to the use of freight containers, the ICAO TI allow for variation in the type of system as long as the system is “equivalent to that required by the certification requirements for a Class C aircraft cargo compartment as determined by the appropriate national authority.” However, we believe clarification of

the language is beneficial, and, in this final rule, we are revising § 175.75(d) to reference Class C cargo compartment requirements specified in the FAA cargo compartment requirements in 14 CFR 25.857. Additionally, based on a recommendation from Omni to be more consistent with ICAO TI, we are also adding a provision to § 175.75(d) for the use of an FAA-certified freight container which has an approved fire or smoke detection system and fire suppression system equivalent to a Class C aircraft cargo compartment.

Two commenters [UPS, FedEx] request clarification whether packages eligible for carriage aboard passenger aircraft should also be allowed to be loaded in an inaccessible Class C cargo compartment on a passenger aircraft, and whether any weight limitations should be applied to packages authorized for passenger aircraft that are loaded in a Class C cargo compartment on a cargo aircraft. FedEx indicates, "...We do not believe it was PHMSA's intent to prohibit DG acceptable for Passenger Aircraft from also being loaded [in an] inaccessible [compartment] provided the compartment has an FAA-approved fire or smoke detection system and a fire-suppression system." FedEx suggests revising § 175.75(c) to accommodate loading in inaccessible cargo compartments aboard passenger aircraft and notes that this would also require a revision of the tables in § 175.75(e). In its comments, UPS suggests that the proposed requirements would place no limit on the amount of cargo aircraft only hazardous materials that can be loaded in an inaccessible compartment provided the compartment meets the certification requirements for a Class C compartment. UPS adds, "...in light of the changes proposed for loading CAO shipments, the unlimited loading of [packages authorized for passenger aircraft] in Class C cargo compartments seems both reasonable and justified." UPS recommends PHMSA also revise § 175.75(c) to except packages

authorized for passenger aircraft and loaded in Class C cargo compartments from the net weight limitations and revise the table in § 175.75(e) to reflect any changes made in paragraphs (c) and (d).

We acknowledge UPS' comments and will work with FAA to consider revisions to the table in a future rulemaking. However, in this final rule, we are revising the introductory language to the quantity and loading tables to clarify that loading cargo aircraft only packages in conformance with paragraph (d) of § 175.75 is considered accessible for quantity limit purposes of the table in § 175.75(f).

One commenter [Omni] believes consideration should be given to eliminate the restriction to limit the net weight of hazardous materials loaded in an inaccessible manner to 25 kg with an additional 75 kg of Division 2.2. Based on comments we received under Docket HM-228 (71 FR 14586; March 22, 2006), we determined such a restriction is necessary for the safety of cargo aircraft transporting hazardous materials, and that greater quantities of hazardous materials in inaccessible compartments on cargo aircraft would unnecessarily compound a situation faced by the crew in an unrelated fire. Therefore, we did not adopt a proposal to eliminate the restriction.

One commenter [NACA] supports our proposal for all materials except Class 8 corrosive materials. NACA states, "...A leaking corrosive substance would then not be discovered until substantial damage has possibly been done to the aircraft and/or other cargo. We disagree. The suggestion to restrict a class of hazardous material from being loaded in an inaccessible cargo compartment may have merit but is beyond the scope of this rulemaking. We did not propose any restrictions on classes of hazardous materials that can be loaded in accordance with § 175.75(d).

Finally, for clarity and greater understanding of the quantity limitations and cargo location requirements in § 175.75, we are revising this section by re-designating paragraph (e)(5) to new paragraph (f) to indicate the Quantity and Loading Tables are a “stand-alone” summary of the requirements found in paragraphs (a) through (e).

Section 175.88

Section 175.88 specifies the requirements for the inspection, orientation and securing of packages of hazardous materials transported by aircraft. In the NPRM, we proposed to revise paragraph (c) to specify that packages of hazardous materials must be secured at all times in an aircraft in a manner that will prevent shifting or prevent a change in the position of the packages in the cargo compartment. Two commenters [COSTHA, Omni] support our proposal to specify that packages of hazardous materials aboard aircraft must be secured at all times. However, COSTHA requests that we clarify paragraph (c) pertaining to the meaning of the provision to require securing of packages in a manner to prevent a change in position of the packages. The commenter believes the use of the term “position” is unclear and can be misinterpreted to mean the location of the package rather than its orientation. The commenter recommends that PHMSA revise the language to be more consistent with the language in the ICAO TI. We agree that the use of the term may be confusing, and therefore, for clarity and greater consistency with ICAO TI, in this final rule, we are revising paragraph (c) to clarify that packages containing hazardous materials must be secured at all times in an aircraft in a manner that will prevent any shifting or any change in the orientation of the packages.

Part 176

Section 176.2

Section 176.2 establishes definitions specific to the transportation of hazardous materials by vessel. In this final rule, we are editorially revising the definition for “Commandant” to update a routing designation.

Section 176.3

Section 176.3 establishes requirements for shipments of hazardous materials that are unacceptable for transportation by vessel, and requires compliance with parts 172 and 173 of the HMR. In this final rule, we are specifying that compliance with subpart C of part 171 is also required.

Section 176.84

Section 176.84 establishes requirements for stowage and segregation for cargo vessels and passenger vessels. Consistent with revisions for certain materials in the HMT, we are removing stowage codes “134,” “139,” and “140,” and adding a new stowage code “145.” Stowage code 140 is assigned to “Aluminum alkyl halides, liquid,” UN3052, and “Aluminum alkyl halides, solid,” UN3461. Both of these shipping descriptions are being removed consistent with the adoption of appropriate generic organometallic entries. Stowage code “139” provides instruction to “stow ‘separated from’ mercury salts.” The provision is a duplication of stowage code “70,” and both codes are assigned to the entry “1,4-Butynediol,” UN2716. Additionally, stowage code “139” is only assigned to this specific entry. Therefore, we are removing stowage code

“139.” Stowage code “140” provides instruction to “stow ‘separated from’ UN3052 and UN3461,” which are identification numbers for aluminum alkyl halides in liquid and solid form, respectively. These entries are being removed in this final rule. Consistent with the removal of these UN numbers from the hazardous materials table, we are removing stowage code “140.” Stowage code “145” provides instruction to “stow ‘separated from’ ammonium compounds except for UN1444.” The stowage code is assigned to “Potassium persulfate,” UN1492, and “Sodium persulfate,” UN1505. These materials may form explosive mixtures with ammonium compounds; however, they do not react dangerously or form explosive mixtures when in contact with “Ammonium persulfate,” UN1444. Finally, in order to fully align the HMR with the IMDG Code, a new vessel stowage code “146” is being added to specify that, “Category B stowage applies for unit loads in open cargo transport units.” The new vessel stowage code “146” is assigned to “Batteries, wet, filled with acid, electric storage,” UN2794 and “Batteries, wet, filled with alkali, electric storage,” UN2795 in column (10B) of the HMT.

Section 176.172

Section 176.172 establishes the structural serviceability requirements for freight containers and vehicles carrying Class 1 (explosive) materials on vessels. The IMDG Code, as recently amended, establishes similar requirements; however, unlike the HMR, the IMDG requirements expressly except containers carrying Division 1.4 explosives. Under the HMR, as provided in § 176.172(c), Division 1.4 explosive materials need not be accompanied by a statement certifying that the freight container is structurally serviceable. However, this certification exception does not explicitly except freight

containers carrying Division 1.4 explosives from the underlying serviceability requirements. Because Division 1.4 explosives are of a comparatively lower risk relative to 1.1, 1.2, and 1.3 explosives, the structural serviceability requirements, like an accompanying certification, become correspondingly less valuable as a safety control. Therefore, in this final rule, we are amending paragraph (a) of this section for consistency with the requirements of the IMDG Code, by excluding freight containers containing Division 1.4 explosive materials from the structural serviceability requirements.

Part 178

Section 178.33b

As noted in the discussion under § 173.306, we are adding a new section to define the design, construction, and testing requirements for inner nonrefillable plastic containers for aerosols. Specifically, we are adding a new § 178.33b to specify packaging; compliance; type and size; inspection; duties of an inspector; material; manufacture; design qualification, production, and leak testing; and marking requirements for inner nonrefillable plastic receptacles.

One commenter [P&G] requests we amend the drop test criteria in § 178.33b-7 to specify that the container should not be dropped on the valve. We acknowledge the commenter's concern about impacting and possibly damaging the valve during the drop test. Therefore, we are amending § 178.33b-7 to specify that orientation of the test containers at drop is statistically random, but that direct impact on the valve or valve closure is to be avoided. We received no additional comments opposing these proposals; therefore, in this final rule, we are adopting these proposals without further

change.

In addition, this same commenter requests that we permit the use of recycled plastics in plastic containers. We disagree. We do not believe that the use of recycled plastic in plastic containers ensures the quality of the material. In addition, we believe that the design qualification testing of the containers will not be representative of the production containers if each batch of plastic is unknown. Therefore, we are adopting without change, these requirements as proposed in the NPRM.

Section 178.502

Section 178.502 establishes the identification codes for marking packagings to certify conformance with UN performance standards. We are including a note at the end of this section to indicate that plastic materials include other polymeric materials such as rubber and, thus, the code used to designate plastic packagings may also be used for packagings constructed of other polymeric materials.

Section 178.703

Section 178.703 establishes marking requirements for IBCs. We are including an additional marking requirement to specify the maximum permitted stacking load applicable when an IBC is in use, with a transition date until January 1, 2011. The symbol must be not less than 100 mm (3.9 inches) x 100 mm (3.9 inches), and must be durable and clearly visible. The letters and numbers must be at least 12 mm high (.48 inches). The mass marked above the symbol must not exceed the load imposed during the design test divided by 1.8.

One commenter [American Trucking Associations] strongly supports our proposal to add a marking requirement to indicate whether or not an IBC is capable of being stacked and to include the maximum permitted stacking load applicable. However, the commenter recommends that the marking be used for all packagings that have stacking restrictions. Additionally, the commenter recommends that we shorten the transition period for use of the new marking to 90 days following the effective date for newly manufactured and remanufactured packagings, and require an effective date on or before January 1, 2011 for all other packagings.

We disagree. PHMSA did not propose to include the marking for all packagings subject to stacking restrictions. Additionally, we believe the January 1, 2011 date provides an adequate transitional period for use of the new stacking marking. Therefore, in this final rule, we are adopting the stacking symbol marking for IBCs as proposed, and clarifying the language to clarify the instructions for use of the marking.

Section 178.801

Section 178.801 establishes general requirements for the testing of IBCs. For clarification, in this final rule, we are adding a sentence to paragraph (f) to specify that the IBC must be fitted with the primary bottom closure during production testing and inspection.

Section 178.810

Section 178.810 establishes the requirements for a drop test conducted for the qualification of all IBC design types. In this final rule, we are revising the criteria in

paragraph (e) for passing the drop test to specify that no damage is permitted which renders the IBC unsafe to be transported for salvage or for disposal, or results in a loss of contents. In addition, we are revising this paragraph to specify that the IBC must be capable of being lifted by an appropriate means until clear of the floor for five minutes.

IV. Regulatory Analyses and Notices

A. Statutory/Legal Authority for this Rulemaking

This final rule is published under the following statutory authorities:

1. 49 U.S.C. 5103(b) authorizes the Secretary of Transportation to prescribe regulations for the safe transportation, including security, of hazardous materials in intrastate, interstate, and foreign commerce. This final rule amends regulations to maintain alignment with international standards by incorporating various amendments, including changes to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations and vessel stowage requirements. To this end, as discussed in detail above, the final rule amends the HMR to more fully align them with the biennial updates of the UN Recommendations, the IMDG Code and the ICAO TI; this will facilitate the transport of hazardous materials in international commerce.

Harmonization serves to facilitate international transportation; at the same time, harmonization promotes the safety of people, property, and the environment by reducing the potential for confusion and misunderstanding that could result if shippers and transporters were required to comply with two or more conflicting sets of regulatory

requirements. While the intent of this rulemaking is to align the HMR with international standards, we review and consider each amendment on its own merit based on its overall impact on transportation safety and the economic implications associated with its adoption into the HMR. Our goal is to harmonize without sacrificing the current HMR level of safety and without imposing undue burdens on the regulated public. Thus, as explained in the corresponding sections above, we are not adopting harmonization with certain specific provisions of the UN Recommendations, the IMDG Code, and the ICAO TI. Moreover, we are maintaining a number of current exceptions for domestic transportation that should minimize the compliance burden on the regulated community.

2. 49 U.S.C. 5120(b) authorizes the Secretary of Transportation to ensure that, to the extent practicable, regulations governing the transportation of hazardous materials in commerce are consistent with standards adopted by international authorities. This rule amends the HMR to maintain alignment with international standards by incorporating various amendments to facilitate the transport of hazardous material in international commerce. To this end, as discussed in detail above, the rule incorporates changes into the HMR based on the Fifteenth revised edition of the UN Recommendations, Amendment 34 to the IMDG Code, and the 2009-2010 ICAO TI, which become effective January 1, 2009. The continually increasing amount of hazardous materials transported in international commerce warrants the harmonization of domestic and international requirements to the greatest extent possible.

B. Executive Order 12866 and DOT Regulatory Policies and Procedures

This final rule is not considered a significant regulatory action under section 3(f)

of Executive Order 12866 and, therefore, was not reviewed by the Office of Management and Budget. The final rule is not considered a significant rule under the Regulatory Policies and Procedures of the Department of Transportation [44 FR 11034]. This final rule applies to offerors and carriers of hazardous materials, such as chemical manufacturers, chemical users and suppliers, packaging manufacturers, distributors, battery manufacturers, radiopharmaceutical companies, and training companies. Benefits resulting from the adoption of the amendments in this final rule include enhanced transportation safety resulting from the consistency of domestic and international hazard communications and continued access to foreign markets by U.S. manufacturers of hazardous materials.

The majority of amendments in this final rule should result in cost savings and ease the regulatory compliance burden for shippers engaged in domestic and international commerce, including trans-border shipments within North America.

We propose a one-year transition period to allow for training of employees and to ease any burden on entities affected by the amendments. The total net increase in costs to businesses in implementing the final rule is considered to be minimal. Initial start-up and inventory costs would result from these changes; however, the costs would be offset by greater long-term savings of conformance with one set of regulations and a one-year transition period. A regulatory evaluation is available for review in the public docket for this rulemaking.

C. Executive Order 13132

This final rule has been analyzed in accordance with the principles and criteria

contained in Executive Order 13132 (“Federalism”). This final rule preempts State, local and Indian tribe requirements but does not propose any regulation that has substantial direct effects on the States, the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government. Therefore, the consultation and funding requirements of Executive Order 13132 do not apply.

The Federal hazardous material transportation law, 49 U.S.C. 5101-5128, contains an express preemption provision (49 U.S.C. 5125(b)) that preempts State, local, and Indian tribe requirements on certain covered subjects, as follows:

- (1) The designation, description, and classification of hazardous material;
- (2) The packing, repacking, handling, labeling, marking, and placarding of hazardous material;
- (3) The preparation, execution, and use of shipping documents related to hazardous material and requirements related to the number, contents, and placement of those documents;
- (4) The written notification, recording, and reporting of the unintentional release in transportation of hazardous material; and
- (5) The design, manufacture, fabrication, inspection, marking, maintenance, recondition, repair, or testing of a packaging or container represented, marked, certified, or sold as qualified for use in transporting hazardous material in commerce.

This final rule addresses covered subject items (1), (2), (3), (4) and (5) above and preempts State, local, and Indian tribe requirements not meeting the “substantively the same” standard. This final rule is necessary to incorporate changes adopted in

international standards, effective January 1, 2009. If the changes in this final rule are not adopted in the HMR, U.S. companies, including numerous small entities competing in foreign markets, would be at an economic disadvantage. These companies would be forced to comply with a dual system of regulations. The changes in this final rule are intended to avoid this result. Federal hazardous materials transportation law provides at section 5125(b)(2) that, if DOT issues a regulation concerning any of the covered subjects, DOT must determine and publish in the Federal Register the effective date of Federal preemption. The effective date may not be earlier than the 90th day following the date of issuance of the final rule and not later than two years after the date of issuance. The effective date of Federal preemption is [90 days after publication of this final rule].

D. Executive Order 13175

This final rule was analyzed in accordance with the principles and criteria contained in Executive Order 13175 (“Consultation and Coordination with Indian Tribal Governments”). Because this final rule does not have tribal implications and does not impose substantial direct compliance costs, the funding and consultation requirements of Executive Order 13175 do not apply.

E. Regulatory Flexibility Act, Executive Order 13272, and DOT Procedures and Policies

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.) requires an agency to review regulations to assess their impact on small entities, unless the agency determines that a rule is not expected to have a significant impact on a substantial number of small

entities. This final rule facilitates the transportation of hazardous materials in international commerce by providing consistency with international standards. This final rule applies to offerors and carriers of hazardous materials, some of whom are small entities, such as chemical users and suppliers, packaging manufacturers, distributors, battery manufacturers, and training companies. As discussed above, under Executive Order 12866, the majority of amendments in this final rule should result in cost savings and ease the regulatory compliance burden for shippers engaged in domestic and international commerce, including trans-border shipments within North America.

Many companies will realize economic benefits as a result of these amendments. Additionally, the changes affected by this final rule will relieve U.S. companies, including small entities competing in foreign markets, from the burden of complying with a dual system of regulations. Therefore, I certify that these amendments will not, if promulgated, have a significant economic impact on a substantial number of small entities.

This final rule has been developed in accordance with Executive Order 13272 (“Proper Consideration of Small Entities in Agency Rulemaking”) and DOT’s procedures and policies to promote compliance with the Regulatory Flexibility Act to ensure that potential impacts of draft rules on small entities are properly considered.

F. Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995, no person is required to respond to an information collection unless it displays a valid OMB control number.

PHMSA currently has approved information collections under OMB Control

Number 2137-0034, “Hazardous Materials Shipping Papers and Emergency Response Information” with 6,500,834 burden hours, and an expiration date of May 31, 2011; and OMB Control Number 2137-0039, “Hazardous Materials Incidents Reports” with 23,746 burden hours, and an expiration date of August 31, 2010. Based on comments received in response to the NPRM, this final rule may result in an information collection and recordkeeping burden increase under these information collections. PHMSA will submit revised information collection requests to the Office of Management and Budget (OMB) for approval, and publish the results in a separate Federal Register notice.

Section 1320.8(d), Title 5, Code of Federal Regulations requires that PHMSA provide interested members of the public and affected agencies an opportunity to comment on information collection and recordkeeping requests. Requests for a copy of these information collections should be directed to Deborah Boothe or T. Glenn Foster, Office of Hazardous Materials Standards (PHH-11), Pipeline and Hazardous Materials Safety Administration, 1200 New Jersey Avenue, S.E., 2nd Floor, Washington, DC. 20590-0001.

G. 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 contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

H. Unfunded Mandates Reform Act

This final rule does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It does not result in costs of \$132 million or more, adjusted for inflation, to either State, local or tribal governments, in the aggregate, or to the private sector in any one year, and is the least burdensome alternative that achieves the objective of the rule.

I. Environmental Assessment

The National Environmental Policy Act, 42 USC §§ 4321-4375, requires that federal agencies analyze proposed actions to determine whether the action will have a significant impact on the human environment. The Council on Environmental Quality (CEQ) regulations order federal agencies to conduct an environmental review considering (1) the need for the proposed action, (2) alternatives to the proposed action, (3) probable environmental impacts of the proposed action and alternatives, and (4) the agencies and persons consulted during the consideration process. 40 C.F.R. § 1508.9(b).

1. Purpose and Need

PHMSA is amending the Hazardous Materials Regulations to maintain alignment with international standards by incorporating various amendments, including changes to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations, and vessel stowage requirements. These revisions are necessary to harmonize the Hazardous Materials Regulations with recent changes to the International Maritime Dangerous Goods Code, the International Civil Aviation Organization's Technical Instructions for the Transport

of Dangerous Goods by Air, and the United Nations Recommendations on the Transport of Dangerous Goods. The amendments are intended to enhance the safety of international hazardous materials transportation through better understanding of the regulations, an increased level of industry compliance, the smooth flow of hazardous materials from their points of origin to their points of destination, and effective emergency response in the event of a hazardous materials incident.

The HMR regulate materials that meet the definition of a marine pollutant in all modes of transportation. The intended effect is to increase the level of safety associated with the transportation of substances hazardous to the marine environment by way of improved communication of their presence in transportation and establishing appropriate requirements for their packaging. The HMR uses a list based system designed to help shippers determine if a material meets the definition of a marine pollutant. Recently, the IMO adopted a criteria based system for identification of materials hazardous to the marine environment based on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

2. Alternatives

In developing this final rule, we considered three alternatives:

- (1) Do nothing.
- (2) Adopt the international standards in their entirety.
- (3) Adopt most of the international standards, with certain modifications based on safety or economic considerations.

Alternative 1:

Because our goal is to facilitate uniformity, compliance, commerce and safety in

the transportation of hazardous materials, we rejected this alternative.

Alternative 2:

Under this alternative, we would adopt the classification criteria for marine pollutants in the IMDG Code consistent with the aquatic toxicity criteria adopted within the GHS. However, the new classification system adopted into the IMDG Code is complicated and the associated criteria for classifying mixtures containing marine pollutants would involve an additional layer of complexity without a corresponding public benefit. Therefore, we are not requiring the use of the new IMDG Code environmental classification system.

Alternative 3:

Consistency between U.S. and international regulations helps to assure the safety of international hazardous materials transportation through better understanding of the regulations, an increased level of industry compliance, the smooth flow of hazardous materials from their points of origin to their points of destination, and effective emergency response in the event of a hazardous materials incident. Under Alternative 3, we would harmonize the HMR with international standards to the extent consistent with U.S. safety and economic goals. As indicated above, we are not adopting provisions that, in our view, do not provide an adequate safety level. Further, we provide for exceptions and extended compliance periods to minimize the potential economic impact of any revisions on the regulated community.

Under this alternative, we maintain the current marine pollutant criteria and list while permitting the use of the GHS Criteria. If a material not listed as a marine pollutant in the HMR meets the definition of a marine pollutant in accordance with the GHS, that

material may be transported as a marine pollutant in accordance with the applicable regulations. Alternative 3 is the only alternative that addresses, in all respects, the purpose of this regulatory action, which is to facilitate the safe and efficient transportation of hazardous materials in international commerce. These actions will provide the greatest possible harmonization with international requirements without posing an undue increased cost burden on industry. For these reasons, alternative 3 is our recommended alternative.

3. Analysis of Environmental Impacts

Hazardous materials are transported by aircraft, vessel, rail, and highway. The potential for environmental damage or contamination exists when packages of hazardous materials are involved in accidents or en route incidents resulting from cargo shifts, valve failures, package failures, or loading, unloading, or handling problems. The ecosystems that could be affected by a release include air, water, soil, and ecological resources (for example, wildlife habitats). The adverse environmental impacts associated with releases of most hazardous materials are short-term impacts that can be greatly reduced or eliminated through prompt clean-up of the accident scene. Most hazardous materials are not transported in quantities sufficient to cause significant, long-term environmental damage if they are released.

The hazardous material regulatory system is a risk-management system that is prevention-oriented and focused on identifying hazards and reducing the probability and quantity of a hazardous material release. Amending the Hazardous Materials Regulations to maintain alignment with international standards enhances the safe transportation of hazardous materials in domestic and international commerce. When considering the

adoption of international standards under the HMR, we review and consider each amendment on its own merit and assess their impact on transportation safety and the environment.

Alternative 1 would maintain the current marine pollutant classification system without change. We do not believe this would result in any significant impacts on the environment. Alternative 2 may result in a significant environmental impact if a material listed in the current marine pollutant list does not meet the GHS criteria. The recommended alternative 3 maintains the marine pollutant criteria and allows the voluntary use of the GHS criteria adopted by the IMDG Code. When a material meets the criteria under the GHS criteria but not the HMR, the material may still be transported under the applicable requirements for a marine pollutant. This would communicate the presence of an environmentally hazardous material consistent with the IMDG Code. Conversely, if a listed marine pollutant does not meet the GHS criteria, the material must be transported as a marine pollutant under the HMR unless approved by the Associate Administrator. The recommended alternative 3 would not result in any significant impact on the environment.

4. Consultations and Public Comment

On June 22, 2005, November 16, 2005, June 21, 2006, and November 29, 2006, PHMSA hosted public meetings with public and private stakeholders to discuss draft U.S. positions on the United Nation's Sub-Committee of Experts on the Transport of Dangerous Goods proposals for the Fifteenth revised edition of the UN Recommendations on the Transport of Dangerous Goods Model Regulations. In addition, PHMSA and the U.S. Coast Guard hosted a public meeting on August 29, 2006,

and hosted a second meeting on September 6, 2007, to discuss amendments to the IMDG Code. A public meeting was held in October 2007 to discuss amendments to the ICAO TI. During these public meetings, U.S. positions on proposed amendments to the UN Recommendations were considered and discussed. Positions were established based on input received during these meetings in conjunction with internal review, including thorough technical review.

We have identified a number of immediate and long-term actions that participants in the international community are taking or will take to enhance the safe transportation of hazardous materials. Through this integrated and cooperative approach, we believe we can be most successful in reducing incidents, enhancing safety, and protecting the public.

J. Privacy Act

Anyone is able to search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the document (or signing the document, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477) or you may visit <http://www.dot.gov/privacy.html>.

K. International Trade Analysis

The Trade Agreements Act of 1979 (Public Law 96-39), as amended by the Uruguay Round Agreements Act (Public Law 103-465), prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary

obstacles to the foreign commerce of the United States. For purposes of these requirements, Federal agencies may participate in the establishment of international standards, so long as the standards have a legitimate domestic objective, such as providing for safety, and do not operate to exclude imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. PHMSA participates in the establishment of international standards in order to protect the safety of the American public, and we have assessed the effects of the final rule to ensure that it does not exclude imports that meet this objective. Accordingly, this rulemaking is consistent with PHMSA's obligations under the Trade Agreement Act, as amended.

List of Subjects

49 CFR Part 171

Exports, Hazardous materials transportation, Hazardous waste, Imports, Incorporation by reference, Reporting and recordkeeping requirements.

49 CFR Part 172

Education, Hazardous materials transportation, Hazardous waste, Incorporation by reference, Labeling, Markings, Packaging and containers, Reporting and recordkeeping requirements.

49 CFR Part 173

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

49 CFR Part 175

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

49 CFR Part 176

Hazardous materials transportation, Incorporation by reference, Maritime carriers, Radioactive materials, Reporting and recordkeeping requirements.

49 CFR Part 178

Hazardous materials transportation, Incorporation by reference, Motor vehicle safety, Packaging and containers, Reporting and recordkeeping requirements.

In consideration of the foregoing, 49 CFR Chapter I is proposed to be amended as follows:

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

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

Authority: 49 U.S.C. 5101–5128, 44701; 49 CFR 1.45 and 1.53; Pub. L. 101–410 section 4 (28 U.S.C. 2461 note); Pub. L. 104–134 section 31001.

2. In § 171.7, in the paragraph (a)(3) table, the following changes are made:

a. Under the entry “International Civil Aviation Organization (ICAO), the organization’s mailing address and the entry “Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Technical Instructions), 2007-2008 Edition” are revised;

b. Under the entry “International Maritime Organization (IMO)” the organization’s mailing address and the entries “International Convention for the Safety of Life at Sea (SOLAS) Amendments 2000, Chapter II-2, Regulation 19, 2001,” and “International Maritime Dangerous Goods Code (IMDG Code), 2006 Edition, Incorporating Amendment 33-06 (English Edition), Volumes 1 and 2” are revised;

c. Under the entry “International Organization for Standardization,” the organization’s mailing address is revised and the entries “ISO 10156:1996, Gases and Gas Mixtures – Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets, Second edition, May 2005 (E)” and “ISO 10156-2:2005, Gas cylinders -- Gases and gas mixtures -- Part 2: Determination of oxidizing ability of toxic and corrosive gases and gas mixtures, First edition, August 2005, (E)” are added in appropriate numerical order;

d. Under the entry, “Transport Canada,” the organization’s mailing address and the entry “Transportation of Dangerous Goods Regulations (Transport Canada TDG Regulations)” are revised; and

e. Under the entry “United Nations,” the organization’s mailing address and the entry “UN Recommendations on the Transport of Dangerous Goods, Fourteenth revised

edition (2005), Volumes I and II” are revised.

The additions and revisions read as follows:

§ 171.7 Reference material.

(a) * * *

(3) Table of material incorporated by reference. * * *

Source and name of material	49 CFR reference
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* * * * *

International Civil Aviation Organization (“ICAO”), P.O. Box 400, Place de l’Aviation International, 1000 Sherbrooke Street West, Montreal, Quebec, Canada H3A 2R2, 1-514-954-8219, <http://www.icao.int>:

ICAO Technical Instructions available from: INTEREG, International Regulations, Publishing and Distribution Organization, P.O. Box 60105, Chicago, IL 60660.

Technical Instructions for the Safe Transport of Dangerous Goods by Air (“ICAO Technical Instructions”), 2009-2010 Edition.	171.8; 171.22; 171.23; 171.24; 172.202; 172.401; 172.512; 172.602; 173.56; 173.320; 175.33; 178.3.
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* * * * *

International Maritime Organization (“IMO”), 4 Albert Embankment, London, SE1 7SR,

United Kingdom or New York Nautical Instrument & Service Corporation, 140 West Broadway, New York, NY 10013, +44 (0) 20 7735 7611, <http://www.imo.org>:

International Convention for the Safety of Life at Sea, (“SOLAS”) 176.63, 176.84.
Amendments 2002, Chapter II-2 /Regulation 19, Consolidated Edition 2004.

International Maritime Dangerous Goods Code (“IMDG Code”), 2008 Edition, Incorporating Amendment 34-08 (English Edition), Volumes 1 and 2.	171.22; 171.23; 171.25; 172.101 Appendix B; 172.202; 172.401; 172.502; 172.602; 173.21; 173.56; 176.2; 176.5; 176.11; 176.27; 176.30; 176.84; 178.3; 178.274.
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International Organization for Standardization, Case Postale 56, CH-1211, Geneve 20, Switzerland, +41 22 749 01 11, <http://www.iso.org>; Also available from: ANSI 25, West 43rd Street, New York, NY 10036, 1-212-642-4900, <http://www.ansi.org>.

* * * * *

ISO 10156:1996, Gases and Gas Mixtures – Determination of fire potential and oxidizing	173.115
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ability for the selection of cylinder valve outlets,
Second edition, February 1996 (E).

ISO 10156-2:2005, Gas cylinders -- Gases and gas mixtures – 173.115

Part 2: Determination of oxidizing ability of toxic
and corrosive gases and gas mixtures, First edition,
August 2005, (E).

* * * * *

Transport Canada, TDG Canadian Government Publishing Center, Supply and Services,
Canada, Ottawa, Ontario, Canada K1A 0S9, 416-973-1868, <http://www.tc.gc.ca>:

* * * * *

subsection 4.18(5) of Amendment 6 171.12; 171.22;
(SOR/2008-34) February 7, 2008. 171.23; 172.401;
172.502; 172.519;
172.602; 173.31;
173.32; 173.33.

* * * * *

United Nations, Publications, 2 United Nations Plaza, Room DC2-853, New York, NY
10017, 1-212-963-8302, <http://unp.un.org>.

UN Recommendations on the Transport of Dangerous 171.8; 171.12;
Goods, Fifteenth revised edition (2007). 171.22; 171.23;
Volumes I and II. 172.202; 172.401;

172.502; 173.22;
173.24; 173.24b;
173.40; 173.56;
173.192; 173.197;
173.302b; 173.304b;
178.75; 178.274;
178.801.

* * * * *

3. Section 171.8, the definitions for “fuel cell cartridge” or “fuel cartridge” is revised to read as follows:

Section 171.8 Definitions and abbreviations.

* * * * *

Fuel cell cartridge or fuel cartridge means an article that stores fuel for discharge into the fuel cell through a valve(s) that controls the discharge of fuel into the fuel cell.

* * * * *

4. In § 171.14 new paragraph (h) is added to read as follows:

§ 171.14 Transitional provisions for implementing certain requirements.

* * * * *

(h) A final rule published in the Federal Register on January 28, 2008, effective

October 1, 2008, resulted in revisions to this subchapter. The proper shipping name “Gasohol gasoline mixed with ethyl alcohol, with not more than 20 percent alcohol” in effect on January 28, 2008, may continue to be used until October 1, 2010. Effective October 1, 2010, the new proper shipping name “Ethanol and gasoline mixture or ethanol and motor spirit mixture or ethanol and petrol mixture,” and the revised proper shipping name “Gasohol gasoline mixed with ethyl alcohol, with not more than 10% alcohol must be used, as appropriate.

5. In § 171.15, paragraphs (b)(4) and (b)(5) are revised and a new paragraph (b)(6) is added to read as follows:

§ 171.15 Immediate notice of certain hazardous materials incidents.

* * * * *

(b) * * *

(4) A release of a marine pollutant occurs in a quantity exceeding 450 L (119 gallons) for a liquid or 400 kg (882 pounds) for a solid;

(5) A situation exists of such a nature (e.g., a continuing danger to life exists at the scene of the incident) that, in the judgment of the person in possession of the hazardous material, it should be reported to the NRC even though it does not meet the criteria of paragraph (b)(1), (2), (3) or (4) of this section; or

(6) During transportation by aircraft, a fire, violent rupture, explosion or dangerous evolution of heat (i.e., an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other

evidence) occurs as a direct result of a battery or battery-powered device.

* * * * *

6. In § 171.16, paragraph (a)(3) and (a)(4) are revised and a new paragraph (a)(5) is added to read as follows:

§ 171.16 Detailed hazardous materials incident reports.

(a) * * *

(3) A specification cargo tank with a capacity of 1,000 gallons or greater containing any hazardous material suffers structural damage to the lading retention system or damage that requires repair to a system intended to protect the lading retention system, even if there is no release of hazardous material;

(4) An undeclared hazardous material is discovered; or

(5) A fire, violent rupture, explosion or dangerous evolution of heat (i.e., an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a battery or battery-powered device.

* * * * *

7. In § 171.25, paragraph (c)(5) is revised and new paragraph (d)(3) is added to read as follows:

§ 171.25 Additional requirements for the use of the IMDG Code.

* * * * *

(c) * * *

(5) Effective [INSERT DATE 30 DAYS AFTER PUBLICATION], portable tanks, cargo tanks, and tank cars containing cryogenic liquids must be stowed “on deck” regardless of the stowage authorized in the IMDG Code. Cargo tanks or tank cars containing cryogenic liquids may be stowed one deck below the weather deck when transported on a trailership or trainship that is unable to provide “on deck” stowage because of the vessel's design. Tank cars must be Class DOT-113 or AAR–204W tank cars. Portable tanks, cargo tanks, and tank cars containing cryogenic liquids that are in transportation and stowed below deck on or before [INSERT DATE 30 DAYS AFTER PUBLICATION], may continue to be transported to their final destination.

(d) Use of IMDG Code in port areas. * * *

(3) Notwithstanding § 171.25(d)(1), except for portable tanks, cargo tanks, and tank cars transporting cryogenic liquids before [INSERT DATE 30 DAYS AFTER PUBLICATION], effective [INSERT DATE 30 DAYS AFTER PUBLICATION], portable tanks, cargo tanks, and tank cars containing cryogenic liquids, which are transported by a vessel passing through the United States in the course of being shipped between locations outside of the United States must be stowed “on deck” regardless of the stowage authorized in the IMDG Code. Cargo tanks or tank cars containing cryogenic liquids may be stowed one deck below the weather deck when transported on a trailership or trainship that is unable to provide “on deck” stowage because of the vessel's design. Tank cars must be Class DOT-113 or AAR–204W tank cars. Portable tanks, cargo tanks, and tank cars containing cryogenic liquids that are in transportation and stowed below deck on or before [INSERT DATE 30 DAYS AFTER PUBLICATION], may continue to be transported to their final destination.

* * * * *

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

8. The authority citation for part 172 continues to read as follows:

Authority: 49 U.S.C. 5101-5128; 44701; 49 CFR 1.53.

9. In § 172.101, in the Hazardous Materials Table, in Column (7), remove “TP12”
each place it appears.

10. In § 172.101, the Hazardous Materials Table is amended by removing, adding and
revising entries, in the appropriate alphabetical sequence, to read as follows:

§ 172.101 HAZARDOUS MATERIALS TABLE

Symbols (1)	Hazardous materials descriptions and proper shipping names (2)	Hazard class or division (3)	Identification Numbers (4)	PG (5)	Label Codes (6)	Special provisions (§ 172.102) (7)	(8) Packaging (§ 173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions (8A)	Non-bulk (8B)	Bulk (8C)	Passenger aircraft/rail (9A)	Cargo aircraft only (9B)	Location (10A)	Other (10B)
	[REMOVE]												
G	*		*		*		*		*		*		*
	Amine, flammable, corrosive, n.o.s. <u>or</u> Polyamines, flammable, corrosive, n.o.s.	3	UN2733	I	3, 8	T14, TP1, TP27	None	201	243	0.5 L	2.5 L	D	40, 52
	Amine, liquid, corrosive, flammable n.o.s. <u>or</u> Polyamines, liquid corrosive, flammable n.o.s.	8	UN2734	I	8, 3	A3, A6, N34, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	A	52
				II	3, 8	IB2, T11, TP1, TP27	150	202	243	1 L	5 L	B	40, 52
				III	3, 8	B1, IB3, T7, TP1, TP28	150	203	242	5 L	60 L	A	40, 52
				II	8, 3	IB2, T11, TP2, TP27	None	202	243	1 L	30 L	A	52
	*		*		*		*		*		*		*
	Aluminum alkyl halides, liquid	4.2	UN3052	I	4.2, 4.3	173, B9, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	134
	Aluminum alkyl halides, solid	4.2	UN3461	I	4.2, 4.3	173, T21, TP7, TP33	None	181	244	Forbidden	Forbidden	D	134
	Aluminum alkyl hydrides	4.2	UN3076	I	4.2, 4.3	173, B9, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	
	Aluminum alkyls	4.2	UN3051	I	4.2, 4.3	173, B9, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	
	*		*		*		*		*		*		*
	Batteries, dry, <u>not subject to the requirements of this subchapter</u>	.....			.....	130	.....	.....	.....	.....	.....		.....
	*		*		*		*		*		*		*

	Cartridges, sporting, see Cartridges for weapons, inert projectile, or Cartridges, small arms. *												
	*	*	*	*	*	*	*	*	*	*	*	*	*
+	Chloronitrobenzene, liquid <u>ortho</u>	6.1	UN3409	II	6.1	IB2, T7, TP2	153	202	243	5 L	60 L	A	
+	Chloronitrobenzenes, solid <u>meta or para</u> *	6.1	UN1578	II	6.1	IB8, IP2, IP4, T3, TP33	153	212	242	25 kg	100 kg	A	
	*	*	*	*	*	*	*	*	*	*	*	*	*
	Chlorosilanes, toxic, corrosive, n.o.s.	6.1	UN3361	II	6.1, 8	IB1, T11, TP2, TP13	None	202	243	1 L	30 L	C	40
	Chlorosilanes, toxic, corrosive, flammable, n.o.s. *	6.1	UN3362	II	6.1, 3, 8	IB1, T11, TP2, TP13	None	202	243	1 L	30 L	C	40, 125
	*	*	*	*	*	*	*	*	*	*	*	*	*
G	Corrosive, liquid, acidic, inorganic, n.o.s.	8	UN 3264	I	8	A6, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
	*	*	*	*	*	*	*	*	*	*	*	*	*
				II	8	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
				III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
	*	*	*	*	*	*	*	*	*	*	*	*	*
G	Dyes, liquid, corrosive, n.o.s. or Dye intermediates, liquid, corrosive, n.o.s.	8	UN 2801	I	8	11, A6, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	A	.....
	*	*	*	*	*	*	*	*	*	*	*	*	*
				II	8	11, B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	A	
				III	8	11, IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	
	*	*	*	*	*	*	*	*	*	*	*	*	*
	Diethylzinc	4.2	UN1366	I	4.2, 4.3	173, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	18
	*	*	*	*	*	*	*	*	*	*	*	*	*
	Dimethylzinc	4.2	UN1370	I	4.2, 4.3	173, B11, B16, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	18
	*	*	*	*	*	*	*	*	*	*	*	*	*

Fuel cell cartridges <u>containing flammable liquids</u> *	3	UN3473	II	3		150	230	None	5 L	60 L	A	
		*		*		*		*		*		*
Hydrogen in a metal hydride storage system *	2.1	UN3468		2.1	167	None	214	None	Forbidden	100 kg gross	D	
		*		*		*		*		*		*
Hypochlorite solutions *	8	UN1791	II	8	A7, B2, B15, IB2, IP5, N34, T7, TP2, TP24	154	202	242	1 L	30 L	B	26
		*		*		*		*		*		*
Lithium alkyls, liquid	4.2	UN2445	I	4.2, 4.3	173, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	
Lithium alkyls, solid *	4.2	UN3433	I	4.2, 4.3	173, B11, T21, TP7, TP33	None	181	244	Forbidden	Forbidden	D	
		*		*		*		*		*		*
Magnesium alkyls *	4.2	UN3053	I	4.2, 4.3	B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	18
		*		*		*		*		*		*
Magnesium diphenyl *	4.2	UN2005	I	4.2	173, T21, TP7, TP33	None	187	244	Forbidden	Forbidden	C	
		*		*		*		*		*		*
Nitric acid <u>other than red fuming, with not more than 70 percent nitric acid</u> *	8	UN2031	II	8	A6, B2, B47, B53, IB2, T8, TP2, TP12	None	158	242	Forbidden	30 L	D	44, 66, 89, 90, 110, 111
		*		*		*		*		*		*
<u>2,5-Norbornadiene, stabilized, see Bicyclo 2,2,1 hepta-2,5-diene, stabilized</u> *		.....		.....		*		*		*		*
		*		*		*		*		*		*
Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s. <u>with more than 10 percent but not more than 20 percent PETN, by mass</u> *	4.1	UN3344	II	4.1	118, N85	None	214	None	Forbidden	Forbidden	E	
		*		*		*		*		*		*

	Receptacles, small, containing gases (gas cartridges) <u>non-flammable, without release device, not refillable and not exceeding 1 L capacity</u>	2.2	UN2037		2.2, 5.1	A14	306	304	None	1 kg	15 kg	B	40
	Receptacles, small, containing gas (gas cartridges) <u>flammable, without release device, not refillable and not exceeding 1 L capacity</u>	2.1	UN2037		2.1		306	304	None	1 kg	15 kg	B	40
	Receptacles, small, containing gas (gas cartridges) <u>non-flammable, without release device, not refillable and not exceeding 1 L capacity</u>	2.2	UN 2037		2.2		306	304	None	1 kg	15 kg	B	40
	*		*		*		*		*		*		*
	Regulated medical waste, n.o.s. or Clinical waste, unspecified, n.o.s. or (BIO) Medical waste, n.o.s.	6.2	UN 3291	II	6.2	A13	134	197	197	No limit	No limit	B	40
	*		*		*		*		*		*		*
G	Self-heating, solid, corrosive, organic, n.o.s.	4.2	UN 3126	II	4.2, 8	IB5, IP2, T3, TP33	None	212	242	15 kg	50 kg	C	
				III	4.2, 8	IB8, IP3, T1, TP33	None	213	242	25 kg	100 kg	C	
	*		*		*		*		*		*		*
G	Self-heating, solid, organic, n.o.s.	4.2	UN 3088	II	4.2	IB6, IP2, T3, TP33	None	212	241	15 kg	50 kg	C	
				III	4.2	IB8, IP3, T1, TP33	None	213	241	25 kg	100 kg	C	
G	Self-heating, solid, oxidizing, n.o.s.	4.2	UN 3127	.....	4.2, 5.1		None	214	214	Forbidden	Forbidden		
	*		*		*		*		*		*		*
G	Self-heating, solid, toxic, organic, n.o.s.	4.2	UN 3128	II	4.2, 6.1	IB5, IP2, T3, TP33	None	212	242	15 kg	50 kg	C	
				III	4.2, 6.1	IB8, IP3, T1, TP33	None	213	242	25 kg	100 kg	C	

	*		*		*		*		*		*		*
	Trinitrophenol, wetted <u>with not less than 30 percent water, by mass</u>	4.1	UN1344	I	4.1	23, A8, A19, N41	None	211	None	1 kg	15 kg	E	28, 36
	*		*		*		*		*		*		*
	Trinitrotoluene, wetted <u>with not less than 30 percent water, by mass</u>	4.1	UN1356	I	4.1	23, A2, A8, A19, N41	None	211	None	0.5 kg	0.5 kg	E	28
	*		*		*		*		*		*		*
	Xenon	2.2	UN2036		2.2		306	302	None	75 kg	150 kg	A	.....
	*		*		*		*		*		*		*
	[ADD]												
	*		*		*		*		*		*		*
G	Amine, flammable, corrosive, n.o.s. <u>or</u> Polyamines, flammable, corrosive, n.o.s.	3	UN2733	I	3, 8	T14, TP1, TP27	None	201	243	0.5 L	2.5 L	D	40, 52
				II	3, 8	IB2, T11, TP1, TP27	150	202	243	1 L	5 L	B	40, 52
				III	3, 8	B1, IB3, T7, TP1, TP28	150	203	242	5 L	60 L	A	40, 52
G	Amine, liquid, corrosive, flammable, n.o.s. <u>or</u> Polyamines, liquid, corrosive, flammable, n.o.s.	8	UN2734	I	8, 3	A3, A6, N34, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	A	52
				II	8, 3	IB2, T11, TP2, TP27	None	202	243	1 L	30 L	A	52
	*		*		*		*		*		*		*
	Batteries, dry, sealed, n.o.s.	.....			.....	130	.....	.....	.....	.....	.....		.....
	*		*		*		*		*		*		*
	<u>Cartridges, sporting, see Cartridges for weapons, inert projectile, or Cartridges, small arms.</u>	.....			.....		.....	.....	.....	.....	.....		.....
	*		*		*		*		*		*		*
+	Chloronitrobenzenes, liquid	6.1	UN3409	II	6.1	IB2, T7, TP2	153	202	243	5 L	60 L	A	.....

+	Chloronitrobenzenes, solid	6.1	UN1578	II	6.1	IB8, IP2, IP4, T3, TP33	153	212	242	25 kg	100 kg	A	.....
	*		*		*		*		*		*		*
	Chlorosilanes, corrosive, flammable, n.o.s.	8	UN2986	II	8, 3	T14, TP2, TP7, TP13, TP27	None	206	243	1 L	30 L	C	40
	*		*		*		*		*		*		*
	Chlorosilanes, toxic, corrosive, flammable, n.o.s.	6.1	UN3362	II	6.1, 3, 8	T14, TP2, TP7, TP13, TP27	None	206	243	1 L	30 L	C	40, 125
	Chlorosilanes, toxic, corrosive, n.o.s.	6.1	UN3361	II	6.1, 8	T14, TP2, TP7, TP13, TP27	None	206	243	1 L	30 L	C	40
	*		*		*		*		*		*		*
G	Corrosive liquid, acidic, inorganic, n.o.s.	8	UN 3264	I	8	A6, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
				II	8	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
				III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
				*		*		*		*		*	
G	Dyes, liquid, corrosive, n.o.s. or Dye intermediates, liquid, corrosive, n.o.s.	8	UN 2801	I	8	11, A6, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	A	.....
				II	8	11, B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	A	.....
				III	8	11, IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	.....
				*		*		*		*		*	
	Fuel cell cartridges or Fuel cell cartridges contained in equipment or Fuel cell cartridges packed with equipment, containing corrosive substances	8	UN3477		8		230	230	230	5 kg	50 kg	A	.....
	Fuel cell cartridges or Fuel cell cartridges contained in equipment or Fuel cell cartridges packed with equipment, containing flammable liquids	3	UN3473		3		230	230	230	5 kg	50 kg	A	.....

Fuel cell cartridges <u>or</u> Fuel cell cartridges contained in equipment <u>or</u> Fuel cell cartridges packed with equipment, <u>containing hydrogen in metal hydride</u>	2.1	UN3479		2.1		230	230	230	1 kg	15 kg	B	.....
Fuel cell cartridges <u>or</u> Fuel cell cartridges contained in equipment <u>or</u> Fuel cell cartridges packed with equipment, <u>containing liquefied flammable gas</u>	2.1	UN3478		2.1		230	230	230	1 kg	15 kg	B	.....
Fuel cell cartridges <u>or</u> Fuel cell cartridges contained in equipment <u>or</u> Fuel cell cartridges packed with equipment, <u>containing water-reactive substances</u>	4.3	UN3476		4.3		230	230	230	5 kg	50 kg	A	.....
*		*		*		*		*		*		*
Hydrogen in a metal hydride storage system <u>or</u> Hydrogen in a metal hydride storage system contained in equipment <u>or</u> Hydrogen in a metal hydride storage system packed with equipment	2.1	UN3468		2.1	167	None	214	None	Forbidden	100 kg gross	D	.....
*		*		*		*		*		*		*
1-Hydroxybenzotriazole, anhydrous, <u>dry or wetted with less than 20 percent water, by mass</u>	1.3C	UN0508		1.3C		None	62	None	Forbidden	Forbidden	10	.....
1-Hydroxybenzotriazole, anhydrous, <u>wetted with not less than 20 percent water, by mass</u>	4.1	UN3474	I	4.1	162, N90	None	211	None	0.5 kg	0.5 kg	D	28, 36
*		*		*		*		*		*		*
Hypochlorite solutions	8	UN1791	II	8	A7, B2, B15, IB2, IP5, N34, T7, TP2, TP24	154	202	242	1 L	30 L	B	26
			III	8	IB3, N34, T4, TP2, TP24	154	203	241	5 L	60 L	B	26
*		*		*		*		*		*		*
Nitric acid <u>other than red fuming, with at least 65 percent, but not more than 70 percent nitric acid</u>	8	UN2031	II	8, 5.1	A6, B2, B47, B53, IB2, IP15, T8, TP2	None	158	242	Forbidden	30 L	D	66, 74, 89, 90

	Nitric acid, <u>other than red fuming, with less than 65 percent nitric acid</u>	8	UN2031	II	8	A6, B2, B47, B53, IB2, IP15, T8, TP2	None	158	242	Forbidden	30 L	D	44, 66, 74, 89, 90
	*		*		*		*		*		*		*
	<u>2,5-Norbornadiene, stabilized, see Bicyclo [2,2,1] hepta-2,5-diene, stabilized</u>		.....		.....					
	*		*		*		*		*		*		*
	Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s. <u>or</u> Pentaerythritol tetranitrate mixture, desensitized, solid, n.o.s. <u>or</u> PETN mixture, desensitized, solid, n.o.s., <u>with more than 10 percent but not more than 20 percent PETN, by mass</u>	4.1	UN3344	II	4.1	118, N85	None	214	None	Forbidden	Forbidden	E	.....
	*		*		*		*		*		*		*
D	Powder, smokeless	1.4C	UN0509		1.4C		None	62	None	Forbidden	Forbidden	06	.....
	*		*		*		*		*		*		*
	Receptacles, small, containing gas <u>or</u> gas cartridges (<u>flammable</u>) <u>without release device, not refillable and not exceeding 1 L capacity</u>	2.1	UN 2037		2.1		306	304	None	1 kg	15 kg	B	40
	Receptacles, small, containing gas <u>or</u> gas cartridges (<u>non-flammable</u>) <u>without release device, not refillable and not exceeding 1 L capacity</u>	2.2	UN 2037		2.2		306	304	None	1 kg	15 kg	B	40
	Receptacles, small, containing gas <u>or</u> gas cartridges (<u>oxidizing</u>) <u>without release device, not refillable and not exceeding 1 L capacity</u>	2.2	UN 2037		2.2, 5.1	A14	306	304	None	1 kg	15 kg	B	40
	*		*		*		*		*		*		*

	Regulated medical waste, n.o.s. <u>or</u> Clinical waste, unspecified, n.o.s. <u>or</u> (BIO)Medical waste, n.o.s., <u>or</u> Biomedical waste, n.o.s. <u>or</u> Medical waste, n.o.s. *	6.2	UN 3291	II	6.2	A13	134	197	197	No limit	No limit	B	40
	*		*		*		*		*		*		*
G	Self-heating solid, corrosive, organic, n.o.s. *	4.2	UN 3126	II	4.2, 8	IB5, IP2, T3, TP33	None	212	242	15 kg	50 kg	C	.....
				III	4.2, 8	IB8, IP3, T1, TP33	None	213	242	25 kg	100 kg	C	.....
	*		*		*		*		*		*		*
G	Self-heating solid, organic, n.o.s. *	4.2	UN 3088	II	4.2	IB6, IP2, T3, TP33	None	212	241	15 kg	50 kg	C	.....
				III	4.2	IB8, IP3, T1, TP33	None	213	241	25 kg	100 kg	C	.....
G	Self-heating solid, oxidizing, n.o.s. *	4.2	UN 3127	.....	4.2, 5.1		None	214	214	Forbidden	Forbidden		
	*		*		*		*		*		*		*
G	Self-heating solid, toxic, organic, n.o.s. *	4.2	UN 3128	II	4.2, 6.1	IB5, IP2, T3, TP33	None	212	242	15 kg	50 kg	C	.....
				III	4.2, 6.1	IB8, IP3, T1, TP33	None	213	242	25 kg	100 kg	C	.....
	*		*		*		*		*		*		*
	Signals, distress, <u>ship</u>	1.4G	UN0505		1.4G		None	62	None	Forbidden	75 kg	06	.....
	Signals, distress, <u>ship</u>	1.4S	UN0506		1.4S		None	62	None	25 kg	100 kg	05	.....
	*		*		*		*		*		*		*
	Signals, smoke	1.4S	UN0507		1.4S		None	62	None	25 kg	100 kg	05	.....
	*		*		*		*		*		*		*
	Trinitrophenol, wetted <u>or</u> Picric acid, wetted, <u>with not less than 30 percent water by mass</u> *	4.1	UN1344	I	4.1	23, A8, A19, N41	None	211	None	1 kg	15 kg	E	28, 36
	*		*		*		*		*		*		*

Trinitrotoluene, wetted or TNT, wetted, <u>with not less than 30 percent water by mass</u>	4.1	UN1356	I	4.1	23, A2, A8, A19, N41	None	211	None	0.5 kg	0.5 kg	E	28, 36
*		*		*		*		*		*		*
Xenon, compressed	2.2	UN2036		2.2		306, 307	302	None	75 kg	150 kg	A	.....
*		*		*		*		*		*		*
[REVISE]												
*		*		*		*		*		*		*
Allyltrichlorosilane, stabilized	8	UN1724	II	8, 3	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	243	Forbidden	30 L	C	40
*		*		*		*		*		*		*
Amyltrichlorosilane	8	UN1728	II	8	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40
*		*		*		*		*		*		*
Argon, compressed	2.2	UN1006		2.2		306, 307	302	314, 315	75 kg	150 kg	A	.....
*		*		*		*		*		*		*
Batteries, dry, containing potassium hydroxide solid, <u>electric storage</u>	8	UN3028	III	8	237	None	213	None	25 kg gross	230 kg gross	A	52
Batteries, wet, filled with acid, <u>electric storage</u>	8	UN2794	III	8		159	159	159	30 kg gross	No limit	A	146
Batteries, wet, filled with alkali, <u>electric storage</u>	8	UN2795	III	8		159	159	159	30 kg gross	No limit	A	52, 146
Batteries, wet, non-spillable, <u>electric storage</u>	8	UN2800	III	8		159a	159	159	No limit	No limit	A	.....
*		*		*		*		*		*		*

Boron trifluoride	2.3	UN1008		2.3, 8	2, B9, B14	None	302	314, 315	Forbidden	Forbidden	D	40
*		*		*		*		*		*		*
Butyltrichlorosilane	8	UN1747	II	8, 3	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	243	Forbidden	30 L	C	40
*		*		*		*		*		*		*
1,4-Butynediol	6.1	UN2716	III	6.1	A1, IB8, IP3, T1, TP33	None	213	240	100 kg	200 kg	C	52, 53, 70
*		*		*		*		*		*		*
Calcium manganese silicon	4.3	UN2844	III	4.3	A1, A19, IB8, IP4, T1, TP33	151	213	241	25 kg	100 kg	A	52, 85, 103
*		*		*		*		*		*		*
Chlorine	2.3	UN1017		2.3, 5.1, 8	2, B9, B14, N86, T50, TP19	None	304	314, 315	Forbidden	Forbidden	D	40, 51, 55, 62, 68, 89, 90
*		*		*		*		*		*		*
Chloroacetic acid, solid	6.1	UN1751	II	6.1, 8	A3, A7, IB8, IP2, IP4, N34, T3, TP33	153	212	242	15 kg	50 kg	C	40
*		*		*		*		*		*		*
Chlorophenyltrichlorosilane	8	UN1753	II	8	A7, B2, B6, N34, T10, TP2, TP7	None	206	242	Forbidden	30 L	C	40
*		*		*		*		*		*		*
Chlorosilanes, corrosive, n.o.s.	8	UN2987	II	8	B2, T14, TP2, TP7, TP13, TP27	None	206	242	1 L	30 L	C	40
Chlorosilanes, flammable, corrosive, n.o.s.	3	UN2985	II	3, 8	T14, TP2, TP7, TP13, TP27	None	206	243	1 L	5 L	B	40
*		*		*		*		*		*		*
Chlorosilanes, water-reactive, flammable, corrosive, n.os.	4.3	UN2988	I	4.3, 3, 8	A2, T14, TP2, TP7, TP13	None	201	244	Forbidden	1 L	D	21, 28, 40, 49, 100

*		*		*		*		*		*		*	
Chromium trioxide, anhydrous.	5.1	UN1463	II	5.1, 6.1, 8	IB8, IP2, IP4, T3, TP33	None	212	242	5 kg	25 kg	A	66, 90	
*		*		*		*		*		*		*	
Cyclohexenyltrichlorosilane	8	UN1762	II	8	A7, B2, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40	
*		*		*		*		*		*		*	
Cyclohexyltrichlorosilane	8	UN1763	II	8	A7, B2, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40	
*		*		*		*		*		*		*	
Dibenzylchlorosilane	8	UN2434	II	8	B2, T10, TP2, TP7, TP13	154	206	242	1 L	30 L	C	40	
*		*		*		*		*		*		*	
Dichloroisocyanuric acid, dry or Dichloroisocyanuric acid salts	5.1	UN2465	II	5.1	28, IB8, IP2, IP4, T3, TP33	152	212	240	5 kg	25 kg	A	13	
*		*		*		*		*		*		*	
Dichlorophenyltrichlorosilane	8	UN1766	II	8	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40	
*		*		*		*		*		*		*	
Diethylchlorosilane	8	UN1767	II	8, 3	A7, B6, N34, T10, TP2, TP7, TP13	None	206	243	Forbidden	30 L	C	40	
*		*		*		*		*		*		*	
Dimethylchlorosilane	3	UN1162	II	3, 8	B77, T10, TP2, TP7, TP13	None	206	243	Forbidden	Forbidden	B	40	
*		*		*		*		*		*		*	
Diphenylchlorosilane	8	UN1769	II	8	A7, B2, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40	
*		*		*		*		*		*		*	

	Dodecyltrichlorosilane	8	UN1771	II	8	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40
	*		*		*		*		*		*		*
G	Environmentally hazardous substance, liquid, n.o.s.	9	UN3082	III	9	8, 146, 335, IB3, T4, TP1, TP29	155	203	241	No limit	No limit	A	.....
G	Environmentally hazardous substance, solid, n.o.s.	9	UN3077	III	9	8, 146, 335, B54, IB8, IP3, N20, T1, TP33	155	213	240	No limit	No limit	A	.....
	*		*		*		*		*		*		*
	Ethylchlorosilane	4.3	UN1183	I	4.3, 8, 3	A2, A3, A7, N34, T14, TP2, TP7, TP13	None	201	244	Forbidden	1 L	D	21, 28, 40, 49, 100 *
	*		*		*		*		*		*		*
	Ethylphenyldichlorosilane	8	UN2435	II	8	A7, B2, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	.....
	*		*		*		*		*		*		*
	Ethyltrichlorosilane	3	UN1196	II	3, 8	A7, N34, T10, TP2, TP7, TP13	None	206	243	1 L	5 L	B	40
	*		*		*		*		*		*		*
D	<u>Gasohol gasoline mixed with ethyl alcohol, with not more than 10% alcohol</u>	3	NA1203	II	3	144, 177	150	202	242	5 L	60 L	E	.....
	<u>Gasoline includes gasoline mixed with ethyl alcohol, with not more than 10% alcohol</u>	3	UN1203	II	3	144, 177, B1, B33, IB2, T8	150	202	242	5 L	60 L	E	.....
	*		*		*		*		*		*		*
	Helium, compressed	2.2	UN1046		2.2		306, 307	302	302, 314	75 kg	150 kg	A	.....
	*		*		*		*		*		*		*
	Hexadecyltrichlorosilane	8	UN1781	II	8	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40
	*		*		*		*		*		*		*

Hexyltrichlorosilane	8	UN1784	II	8	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40
*		*		*		*		*		*		*
Hydrogen iodide, anhydrous	2.3	UN2197		2.3, 8	3, B14, N86, N89	None	304	314, 315	Forbidden	Forbidden	D	40
*		*		*		*		*		*		*
Krypton, compressed	2.2	UN1056		2.2		306, 307	302	None	75 kg	150 kg	A	.....
*		*		*		*		*		*		*
Magnesium bromate	5.1	UN1473	II	5.1	A1, IB8, IP2, IP4, T3, TP33	152	212	242	5 kg	25 kg	A	56, 58
*		*		*		*		*		*		*
Magnesium nitrate	5.1	UN1474	III	5.1	332, A1, IB8, IP3, T1, TP33	152	213	240	25 kg	100 kg	A	.....
*		*		*		*		*		*		*
Medicine, liquid, flammable, toxic, n.o.s.	3	UN3248	II	3, 6.1	IB2	150	202	None	1 L	5 L	B	40
			III	3, 6.1	IB3	150	203	None	5 L	5 L	A	.....
Medicine, liquid, toxic, n.o.s.	6.1	UN1851	II	6.1	.....	153	202	243	5 L	5 L	C	40
			III	6.1	.....	153	203	241	5 L	5 L	C	40
Medicine, solid, toxic, n.o.s.	6.1	UN3249	II	6.1	T3, TP33	153	212	None	5 kg	5 kg	C	40
			III	6.1	T1, TP33	153	213	None	5 kg	5 kg	C	40
*		*		*		*		*		*		*
Methyl Chloromethyl Ether	6.1	UN1239	I	6.1, 3	1, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
*		*		*		*		*		*		*

Methyldichlorosilane	4.3	UN1242	I	4.3, 8, 3	A2, A3, A7, B6, B77, N34, T14, TP2, TP7, TP13	None	201	243	Forbidden	1 L	D	21, 28, 40, 49, 100
*		*		*		*		*		*		*
Methylphenyldichlorosilane	8	UN2437	II	8	T10, TP2, TP7, TP13	None	206	242	1 L	30 L	C	40
*		*		*		*		*		*		*
Methyltrichlorosilane	3	UN1250	II	3, 8	A7, B6, B77, N34, T10, TP2, TP7, TP13	None	206	243	1L	5 L	B	40
*		*		*		*		*		*		*
Neon, compressed	2.2	UN1065		2.2		306, 307	302	None	75 kg	150 kg	A	.....
*		*		*		*		*		*		*
Nitrites, inorganic, n.o.s.	5.1	UN2627	II	5.1	33, IB8, IP2, IP4, T3, TP33	152	212	None	5 kg	25 kg	A	46, 56, 58, 133 *
*		*		*		*		*		*		*
Nitrocellulose, <u>with not more than 12.6 percent</u> , by dry mass mixture with <u>or</u> without plasticizer, with <u>or</u> without pigment	4.1	UN2557	II	4.1	44	151	212	None	1 kg	15 kg	D	28, 36
*		*		*		*		*		*		*
Nitrocellulose, solution, flammable with <u>not more than 12.6 percent nitrogen, by mass, and not more than 55 percent nitrocellulose</u>	3	UN2059	I	3	198, T11, TP1, TP8, TP27	None	201	243	1 L	30 L	E	.....
			II	3	198, IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	.....
			III	3	198, B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
*		*		*		*		*		*		*
Nitrocellulose with alcohol <u>with not less than 25 percent alcohol by mass, and with not more than 12.6 percent nitrogen, by dry mass</u>	4.1	UN2556	II	4.1		151	212	None	1 kg	15 kg	D	28, 36

	Nitrocellulose with water <u>with not less than 25 percent water by mass</u> *	4.1	UN2555	II	4.1		151	212	None	15 kg	50 kg	E	28, 36
	*		*		*		*		*		*		*
	Nitroguanidine, wetted <u>or</u> Picrite, wetted <u>with not less than 20 percent water, by mass</u> *	4.1	UN1336	I	4.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	E	28, 36
	*		*		*		*		*		*		*
	4-Nitrophenylhydrazine, <u>with not less than 30 percent water, by mass</u> *	4.1	UN3376	I	4.1	162, A8, A19, A20, N41	None	211	None	Forbidden	15 kg	E	28, 36
	*		*		*		*		*		*		*
	Nitrostarch, wetted <u>with not less than 20 percent water, by mass</u> *	4.1	UN1337	I	4.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	D	28, 36
	*		*		*		*		*		*		*
	Nonyltrichlorosilane *	8	UN1799	II	8	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40
	*		*		*		*		*		*		*
	Octadecyltrichlorosilane *	8	UN1800	II	8	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40
	*		*		*		*		*		*		*
	Octyltrichlorosilane *	8	UN1801	II	8	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40
	*		*		*		*		*		*		*
G	Organometallic substance, liquid, water-reactive, flammable *	4.3	UN3399	I	4.3, 3	T13, TP2, TP7	None	201	244	Forbidden	1 L	D	40, 52
				II	4.3, 3	IB1, IP2, T7, TP2, TP7	None	202	243	1 L	5 L	D	40, 52
				III	4.3, 3	IB2, IP4, T7, TP2, TP7	None	203	242	5 L	60 L	E	40, 52
	*		*		*		*		*		*		*
G	Organometallic substance, solid, water-reactive	4.3	UN3395	I	4.3	N40, T9, TP7, TP33	None	211	242	Forbidden	Forbidden	E	40, 52

G	Oxidizing liquid, corrosive, n.o.s.	5.1	UN3098	I	5.1, 8	62, A6	None	201	244	Forbidden	2.5 L	D	13, 56, 58, 106, 138
				II	5.1, 8	62, IB1	None	202	243	1 L	5 L	B	13, 34, 56, 58, 106, 138
				III	5.1, 8	62, IB2	152	203	242	2.5 L	30 L	B	13, 34, 56, 58, 106, 138
G	Oxidizing liquid, n.o.s.	5.1	UN3139	I	5.1	62, 127, A2, A6	None	201	243	Forbidden	2.5 L	D	56, 58, 106, 138
				II	5.1	62, 127, A2, IB2	152	202	242	1 L	5 L	B	56, 58, 106, 138
				III	5.1	62, 127, A2, IB2	152	203	241	2.5 L	30 L	B	56, 58, 106, 138
G	Oxidizing liquid, toxic, n.o.s.	5.1	UN3099	I	5.1, 6.1	62, A6	None	201	244	Forbidden	2.5 L	D	56, 58, 106, 138
				II	5.1, 6.1	62, IB1	152	202	243	1 L	5 L	B	56, 58, 95, 106, 138
				III	5.1, 6.1	62, IB2	152	203	242	2.5 L	30 L	B	56, 58, 95, 106, 138
G	Oxidizing solid, corrosive, n.o.s.	5.1	UN3085	I	5.1, 8	62	None	211	242	1 kg	15 kg	D	13, 56, 58, 106, 138
				II	5.1, 8	62, IB6, IP2, T3, TP33	None	212	242	5 kg	25 kg	B	13, 34, 56, 58, 106, 138
				III	5.1, 8	62, IB8, IP3, T1, TP33	152	213	240	25 kg	100 kg	B	13, 34, 56, 58, 106, 138
G	Oxidizing solid, flammable, n.o.s.	5.1	UN3137	I	5.1, 4.1	62	None	214	214	Forbidden	Forbidden		
G	Oxidizing solid, n.o.s.	5.1	UN1479	I	5.1	62, IB5, IP1	None	211	242	1 kg	15 kg	D	56, 58, 106, 138
				II	5.1	62, IB8, IP2, IP4, T3, TP33	152	212	240	5 kg	25 kg	B	56, 58, 106, 138
				III	5.1	62, IB8, IP3, T1, TP33	152	213	240	25 kg	100 kg	B	56, 58, 106, 138
G	Oxidizing solid, self-heating, n.o.s.	5.1	UN3100	I	5.1, 4.2	62	None	214	214	Forbidden	Forbidden		

G	Oxidizing solid, toxic, n.o.s.	5.1	UN3087	II	5.1, 4.2	62	None	214	214	Forbidden	Forbidden	D	56, 58, 106, 138		
				I	5.1, 6.1	62	None	211	242	1 kg	15 kg			B	56, 58, 95, 106, 138
				II	5.1, 6.1	62, IB6, IP2, T3, TP33	152	212	242	5 kg	25 kg			B	
G	Oxidizing solid, water-reactive, n.o.s.	5.1	UN3121	III	5.1, 6.1	62, IB8, IP3, T1, TP33	152	213	240	25 kg	100 kg	B	56, 58, 95, 106, 138		
					5.1, 4.3	62	None	214	214	Forbidden	Forbidden				
				*	*	*	*	*	*	*	*	*	*	*	
	Paint or Paint related material	8	UN3066	II	8	B2, IB2, T7, TP2, TP28	154	173	242	1 L	30 L	A	40		
				III	8	B52, IB3, T4, TP1, TP29	154	173	241	5 L	60 L	A	40		
				*	*	*	*	*	*	*	*	*	*		
	Phenyltrichlorosilane	8	UN1804	II	8	A7, B6, N34, T10, TP2, TP7, TP13	None	206	242	Forbidden	30 L	C	40		
				*	*	*	*	*	*	*	*	*			
	Polychlorinated biphenyls, solid	9	UN3432	II	9	9, 81,140, IB8, IP2, IP4, T3, TP33	155	212	240	100 kg	200 kg	A	95		
				*	*	*	*	*	*	*	*	*			
	Potassium bromate	5.1	UN1484	II	5.1	IB8, IP2, IP4, T3, TP33	152	212	242	5 kg	25 kg	A	56, 58		
				*	*	*	*	*	*	*	*	*			
	Potassium chlorate	5.1	UN1485	II	5.1	A9, IB8, IP2, IP4, N34, T3, TP33	152	212	242	5 kg	25 kg	A	56, 58		
				*	*	*	*	*	*	*	*	*			
	Potassium nitrate and sodium nitrite mixtures	5.1	UN1487	II	5.1	B78, IB8, IP2, IP4, T3, TP33	152	212	240	5 kg	25 kg	A	56, 58		
	Potassium nitrite	5.1	UN1488	II	5.1	IB8, IP2, IP4, T3, TP33	152	212	242	5 kg	25 kg	A	56, 58		

*		*		*		*		*		*		*
Potassium permanganate	5.1	UN1490	II	5.1	IB8, IP2, IP4, T3, TP33	152	212	240	5 kg	25 kg	D	56, 58, 138
*		*		*		*		*		*		*
Potassium persulfate	5.1	UN1492	III	5.1	A1, A29, IB8, IP3, T1, TP33	152	213	240	25 kg	100 kg	A	58, 145
*		*		*		*		*		*		*
Propyltrichlorosilane	8	UN1816	II	8, 3	A7, B2, B6, N34, T10, TP2, TP7, TP13	None	206	243	Forbidden	30 L	C	40
*		*		*		*		*		*		*
Silicon tetrachloride	8	UN1818	II	8	A3, A6, B2, B6, T10, TP2, TP7, TP13	None	202	242	1 L	30 L	C	40
*		*		*		*		*		*		*
Silver nitrate	5.1	UN1493	II	5.1	IB8, IP2, IP4, T3, TP33	152	212	242	5 kg	25 kg	A	.....
*		*		*		*		*		*		*
Sodium bromate	5.1	UN1494	II	5.1	IB8, IP2, IP4, T3, TP33	152	212	242	5 kg	25 kg	A	56, 58
*		*		*		*		*		*		*
Sodium chlorate	5.1	UN1495	II	5.1	A9, IB8, IP2, IP4, N34, T3, TP33	152	212	240	5 kg	25 kg	A	56, 58
*		*		*		*		*		*		*
Sodium peroxoborate, anhydrous	5.1	UN3247	II	5.1	IB8, IP2, IP4, T3, TP33	152	212	240	5 kg	25 kg	A	13, 25
Sodium persulfate	5.1	UN1505	III	5.1	A1, IB8, IP3, T1, TP33	152	213	240	25 kg	100 kg	A	58, 145
*		*		*		*		*		*		*
Trichloroisocyanuric acid, dry	5.1	UN2468	II	5.1	IB8, IP2, IP4, T3, TP33	152	212	240	5 kg	25 kg	A	13
*		*		*		*		*		*		*

	Trimethyltrichlorosilane	3	UN1298	II	3, 8	A3, A7, B77, N34, T10, TP2, TP7, TP13	None	206	243	1 L	5 L	E	40
	*		*		*		*		*		*		*
	Vinyltrichlorosilane, stabilized	3	UN1305	II	3, 8	A3, A7, B6, N34, T10, TP2, TP7, TP13	None	206	243	1 L	5 L	B	40
	*		*		*		*		*		*		*
G	Water-reactive liquid, corrosive, n.o.s.	4.3	UN3129	I	4.3, 8	T14, TP2, TP7	None	201	243	Forbidden	1 L	D	.....
				II	4.3, 8	IB1, T11, TP2	None	202	243	1 L	5 L	E	85
				III	4.3, 8	IB2, T7, TP1	None	203	242	5 L	60 L	E	.....
G	Water-reactive liquid, n.o.s.	4.3	UN3148	I	4.3	T9, TP2, TP7	None	201	244	Forbidden	1 L	E	40
				II	4.3	IB1, T7, TP2	None	202	243	1 L	5 L	E	40
				III	4.3	IB2, T7, TP1	None	203	242	5 L	60 L	E	40
	*		*		*		*		*		*		*
G	Water-reactive solid, corrosive, n.o.s.	4.3	UN3131	I	4.3, 8	IB4, IP1, N40, T9, TP7, TP33	None	211	242	Forbidden	15 kg	D	.....
				II	4.3, 8	IB6, IP2, T3, TP33	151	212	242	15 kg	50 kg	E	85
				III	4.3, 8	IB8, IP4, T1, TP33	151	213	241	25 kg	100 kg	E	85
	*		*		*		*		*		*		*
G	Water-reactive solid, n.o.s.	4.3	UN2813	I	4.3	IB4, N40, T9, TP7, TP33	None	211	242	Forbidden	15 kg	E	40
				II	4.3	IB7, IP2, T3, TP33	151	212	242	15 kg	50 kg	E	40
				III	4.3	IB8, IP4, T1, TP33	151	213	241	25 kg	100 kg	E	40
	*		*		*		*		*		*		*
	Zinc ammonium nitrite	5.1	UN1512	II	5.1	IB8, IP2, IP4, T3, TP33	None	212	242	5 kg	25 kg	E	.....

	Zinc nitrate		5.1	UN1514	II	5.1	IB8, IP2, IP4, T3, TP33	152	212	240	5 kg	25 kg	A	.....
*	*	*	*	*		*		*		*		*		*

12. In § 172.102:

- a. In paragraph (c)(1), Special Provisions 130, 136, 137, 138, 150, 177, 188 and 189 are revised; new Special Provisions 62, 198, 237, 332, and 335 are added; and Special Provisions 36 and 173 are removed.
- b. In paragraph (c)(2), Special Provisions A59 and A60 are revised.
- c. In paragraph (c)(4), in Table 2 IP Codes, new Special Provision IP15 is added.
- d. In paragraph (c)(5), Special Provision N82 is revised and new Special Provision N90 is added.
- e. In paragraph (c)(8), Special Provision TP12 is removed.

The revisions and additions read as follows:

§ 172.102 Special provisions.

* * * * *

(c) * * *

(1) * * *

Code/Special Provisions

* * * * *

62 Oxygen generators (see § 171.8 of this subchapter) are not authorized for transportation under this entry.

* * * * *

130 Dry batteries not specifically covered by another entry in the § 172.101 Table must be described using this entry. Batteries described as “Batteries, dry, sealed, n.o.s” are hermetically sealed and generally utilize metals (other than lead) and/or carbon as electrodes. These batteries are typically used for portable power applications. The rechargeable (and some non-rechargeable) types have gelled alkaline electrolytes (rather than acidic) making it difficult for them to generate hydrogen or oxygen when overcharged and therefore, differentiating them from non-spillable batteries. “Batteries, dry, sealed, n.o.s.” are not subject to any other requirements of this subchapter except for the following:

(1) Incident reporting requirements. For transportation by aircraft, a telephone report in accordance with § 171.15(a) is required if a fire, violent rupture, explosion or dangerous evolution of heat (i.e., an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a dry battery. For all modes of transportation, a written report submitted, retained, and updated in accordance with § 171.16 is required if a fire, violent rupture, explosion or dangerous evolution of heat occurs as a direct result of a dry battery or battery-powered device;

(2) Batteries and battery-powered device(s) containing batteries must be prepared and packaged for transport in a manner to prevent:

(i) A dangerous evolution of heat;

(ii) Short circuits, including but not limited to the following methods:

(a) packaging each battery or each battery-powered device when practicable, in fully enclosed inner packagings made of non-conductive

material;

(b) separating or packaging batteries in a manner to prevent contact with other batteries, devices or conductive materials (e.g., metal) in the packagings; or

(c) ensuring exposed terminals or connectors are protected with non-conductive caps, non-conductive tape, or by other appropriate means; and

(iii) Damage to terminals. If not impact resistant, the outer packaging should not be used as the sole means of protecting the battery terminals from damage or short circuiting. Batteries must be securely cushioned and packed to prevent shifting which could loosen terminal caps or reorient the terminals to produce short circuits. Batteries contained in devices must be securely installed. Terminal protection methods include but are not limited to the following:

(a) securely attaching covers of sufficient strength to protect the terminals;

(b) packaging the battery in a rigid plastic packaging; or

(c) constructing the battery with terminals that are recessed or otherwise protected so that the terminals will not be subjected to damage if the package is dropped.

(3) When transported by aircraft, for a battery whose voltage (electrical potential) exceeds 9 volts:

(i) When contained in a device, the device must be packaged in a manner that prevents unintentional activation or must have an independent means of preventing unintentional activation (e.g., packaging restricts access to activation switch, switch caps or locks, recessed switches, trigger locks, temperature

sensitive circuit breakers, etc.); and

(ii) An indication of compliance with this special provision must be provided by marking each package with the words “not restricted” or by including the words “not restricted” on a transport document such as an air waybill accompanying the shipment.

* * * * *

136 * * *

a. * * *

b. The quantities of hazardous materials do not exceed those specified in § 173.4a of this subchapter; and

c. * * *

* * * * *

137 Cotton, dry; flax, dry; sisal, dry; and tampico fiber, dry are not subject to the requirements of this subchapter when they are baled in accordance with ISO 8115, “Cotton Bales—Dimensions and Density” (IBR, see §171.7 of this subchapter) to a density of not less than 360 kg/m³ (22.1 lb/ft³) for cotton, 400 kg/m³ (24.97 lb/ft³) for flax, 620 kg/m³ (38.71 lb/ft³) for sisal and 360 kg/m³ (22.1 lb/ft³) for tampico fiber and transported in a freight container or closed transport vehicle.

138 Lead compounds which, when mixed in a ratio of 1:1000 with 0.07M (Molar concentration) hydrochloric acid and stirred for one hour at a temperature of 23 °C ± 2 °C, exhibit a solubility of 5% or less are considered insoluble and are not subject to the requirements of this subchapter unless they meet criteria as another hazard class or

division.

* * * * *

150 This description may be used only for uniform mixtures of fertilizers containing ammonium nitrate as the main ingredient within the following composition limits:

a. Not less than 90% ammonium nitrate with not more than 0.2% total combustible, organic material calculated as carbon, and with added matter, if any, that is inorganic and inert when in contact with ammonium nitrate; or

b. Less than 90% but more than 70% ammonium nitrate with other inorganic materials, or more than 80% but less than 90% ammonium nitrate mixed with calcium carbonate and/or dolomite and/or mineral calcium sulphate, and not more than 0.4% total combustible, organic material calculated as carbon; or

c. Ammonium nitrate-based fertilizers containing mixtures of ammonium nitrate and ammonium sulphate with more than 45% but less than 70% ammonium nitrate, and not more than 0.4% total combustible, organic material calculated as carbon such that the sum of the percentage of compositions of ammonium nitrate and ammonium sulphate exceeds 70%.

* * * * *

177 Gasoline, or, ethanol and gasoline mixtures, for use in internal combustion engines (e.g., in automobiles, stationary engines and other engines) must be assigned to Packing Group II regardless of variations in volatility.

* * * * *

188 Small lithium cells and batteries. Lithium cells or batteries, including cells or

batteries packed with or contained in equipment, are not subject to any other requirements of this subchapter if they meet all of the following:

a. Primary lithium batteries and cells.

(1) Primary lithium batteries and cells are forbidden for transport aboard passenger-carrying aircraft. The outside of each package that contains primary (nonrechargeable) lithium batteries or cells must be marked “PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT” or “LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT” on a background of contrasting color. The letters in the marking must be:

(i) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or

(ii) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less, except that smaller font may be used as necessary to fit package dimensions; and

(2) The provisions of paragraph (a)(1) do not apply to packages that contain 5 kg (11 pounds) net weight or less of primary lithium batteries or cells that are contained in or packed with equipment and the package contains no more than the number of lithium batteries or cells necessary to power the piece of equipment;

b. For a lithium metal or lithium alloy cell, the lithium content is not more than 1.0 g. For a lithium-ion cell, the equivalent lithium content is not more than 1.5 g;

c. For a lithium metal or lithium alloy battery, the aggregate lithium content is not

more than 2.0 g. For a lithium-ion battery, the aggregate equivalent lithium content is not more than 8 g;

d. Effective October 1, 2009, the cell or battery must be of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see §171.7 of this subchapter);

e. Cells or batteries are separated or packaged in a manner to prevent short circuits and are packed in a strong outer packaging or are contained in equipment;

f. Effective October 1, 2008, except when contained in equipment, each package containing more than 24 lithium cells or 12 lithium batteries must be:

(1) Marked to indicate that it contains lithium batteries, and special procedures should be followed if the package is damaged;

(2) Accompanied by a document indicating that the package contains lithium batteries and special procedures should be followed if the package is damaged;

(3) Capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained in the package, without shifting of the contents that would allow short circuiting and without release of package contents; and

(4) Gross weight of the package may not exceed 30 kg (66 pounds). This requirement does not apply to lithium cells or batteries packed with equipment;

g. Electrical devices must conform to §173.21;

h. For transportation by aircraft, a telephone report in accordance with § 171.15(a) is required if a fire, violent rupture, explosion or dangerous evolution of heat (i.e., an amount of heat sufficient to be dangerous to packaging or personal safety to include

charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a lithium battery. For all modes of transportation, a written report submitted, retained, and updated in accordance with § 171.16 is required if a fire, violent rupture, explosion or dangerous evolution of heat occurs as a direct result of a lithium battery or battery-powered device; and

i. Lithium batteries or cells are not authorized aboard an aircraft in checked or carry-on luggage except as provided in §175.10.

* * * * *

189 Medium lithium cells and batteries. Effective October 1, 2008, when transported by motor vehicle or rail car, lithium cells or batteries, including cells or batteries packed with or contained in equipment, are not subject to any other requirements of this subchapter if they meet all of the following:

a. The lithium content anode of each cell, when fully charged, is not more than 5 grams.

b. The aggregate lithium content of the anode of each battery, when fully charged, is not more than 25 grams.

c. The cells or batteries are of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see §171.7 of this subchapter). A cell or battery and equipment containing a cell or battery that was first transported prior to January 1, 2006 and is of a type proven to meet the criteria of Class 9 by testing in accordance with the tests in the UN Manual of Tests and Criteria, Third revised edition, 1999, need not be retested.

d. Cells or batteries are separated or packaged in a manner to prevent short circuits and are packed in a strong outer packaging or are contained in equipment.

e. The outside of each package must be marked “LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT AND VESSEL” on a background of contrasting color, in letters:

(1) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or

(2) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less, except that smaller font may be used as necessary to fit package dimensions.

f. Except when contained in equipment, each package containing more than 24 lithium cells or 12 lithium batteries must be:

(1) Marked to indicate that it contains lithium batteries, and special procedures should be followed if the package is damaged;

(2) Accompanied by a document indicating that the package contains lithium batteries and special procedures should be followed if the package is damaged;

(3) Capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained in the package, without shifting of the contents that would allow short circuiting and without release of package contents; and

(4) Gross weight of the package may not exceed 30 kg (66 pounds). This requirement does not apply to lithium cells or batteries packed with equipment.

g. Electrical devices must conform to §173.21 of this subchapter; and

h. A written report submitted, retained, and updated in accordance with § 171.16 is required if a fire, violent rupture, explosion or dangerous evolution of heat (i.e., an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a lithium battery or battery-powered device.

* * * * *

198 Nitrocellulose solutions containing not more than 20% nitrocellulose may be transported as paint or printing ink, as applicable. See UN1210, UN1263, UN3066, UN3469, and UN3470.

237 “Batteries, dry, containing potassium hydroxide solid, electric storage” must be prepared and packaged in accordance with the requirements of § 173.159(a), (b), and (c). For transportation by aircraft, the provisions of § 173.159(b)(2) are applicable.

332 Magnesium nitrate hexahydrate is not subject to the requirements of this subchapter.

335 Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as “Environmentally hazardous substances, solid, n.o.s,” UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leakproof when used as bulk packaging.

* * * * *

(2) * * *

A59 Sterilization devices, when containing less than 30 mL per inner packaging with no more than 300 mL per outer packaging may be transported in accordance with provisions

in § 173.4a, irrespective of §173.4a(b). In addition, after filling, each inner packaging must be determined to be leak-tight by placing the inner packaging in a hot water bath at a temperature and for a period of time sufficient to ensure an internal pressure equal to the vapor pressure of ethylene oxide at 55 °C is achieved. Any inner packaging showing evidence of leakage, distortion or other defect under this test may not be transported under the terms of this special provision. In addition to the packaging required in § 173.4a, inner packagings must be placed in a sealed plastic bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the inner packaging. Glass inner packagings must be placed within a protective shield capable of preventing the glass from puncturing the plastic bag in the event of damage to the packaging (e.g., crushing).

A60 Sterilization devices, when containing less than 30 mL per inner packaging with not more than 150 mL per outer packaging, may be transported in accordance with the provisions in §173.4a, irrespective of §173.4a(b), provided such packagings were first subjected to comparative fire testing. Comparative fire testing must show no difference in burning rate between a package as prepared for transport (including the substance to be transported) and an identical package filled with water.

* * * * *

(4) * * *

Table 2–IP Codes

IBC Code	Authorized IBCs
IP1	IBCs must be packed in closed freight containers or a closed transport vehicle.
IP2	When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle.
IP3	Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner.
IP4	Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner.

IP5	IBCs must have a device to allow venting. The inlet to the venting device must be located in the vapor space of the IBC under maximum filling conditions.
IP6	Non-specification bulk bins are authorized.
IP7	For UN identification numbers 1327, 1363, 1364, 1365, 1386, 1841, 2211, 2217, 2793 and 3314, IBCs are not required to meet the IBC performance tests specified in part 178, subpart N of this subchapter.
IP8	Ammonia solutions may be transported in rigid or composite plastic IBCs (31H1, 31H2 and 31HZ1) that have successfully passed, without leakage or permanent deformation, the hydrostatic test specified in § 178.814 of this subchapter at a test pressure that is not less than 1.5 times the vapor pressure of the contents at 55 °C (131 °F).
IP13	Transportation by vessel in IBCs is prohibited.
IP14	Air must be eliminated from the vapor space by nitrogen or other means.
IP15	For UN2031 with more than 55% nitric acid, rigid plastic IBCs and composite IBCs with a rigid plastic inner receptacle are authorized for two years from the date of IBC manufacture.
IP20	Dry sodium cyanide or potassium cyanide is also permitted in siftproof, water-resistant, fiberboard IBCs when transported in closed freight containers or transport vehicles.

(5) * * *

Code/Special Provisions

* * * * *

N82 See § 173.115 of this subchapter for classification criteria for flammable aerosols.

* * * * *

N90 Metal packagings are not authorized.

* * * * *

13. In § 172.202, paragraph (a)(3) introductory text, paragraph (a)(4), and (a)(6)(vi) are revised to read as follows:

§ 172.202 Description of hazardous material shipping papers.

(a) * * *

(3) The hazard class or division number prescribed for the material, as shown in Column (3) of the §172.101 table. The subsidiary hazard class or division number is not required to be entered when a corresponding subsidiary hazard label is not required.

Except for combustible liquids, the subsidiary hazard class(es) or subsidiary division number(s) must be entered in parentheses immediately following the primary hazard class or division number. In addition—

* * * * *

(4) The packing group in Roman numerals, as designated for the hazardous material in Column (5) of the §172.101 table. Class 1 (explosives) materials; self-reactive substances; batteries other than those containing lithium, lithium ions, or sodium; Division 5.2 materials; and entries that are not assigned a packing group (e.g., Class 7) are excepted from this requirement. The packing group may be preceded by the letters “PG” for example “PG II;” and

* * * * *

(6) * * *

(vi) For items where “No Limit” is shown in Column (9A) or (9B) of the § 172.101 table, the quantity shown must be the net mass or volume of the material. For articles (e.g., UN2800 and UN3166) the quantity must be the gross mass, followed by the letter “G”; and

* * * * *

14. In § 172.322, paragraphs (d) and (e) are revised to read as follows:

§ 172.322 Marine Pollutants.

* * * * *

(d) The MARINE POLLUTANT mark is not required –

(1) On single packagings or combination packagings where each single package or each inner packaging of combination packagings has:

(i) a net quantity of 5 L (1.3 gallons) or less for liquids; or

(ii) a net mass of 5 kg (11 pounds) or less for solids

* * * * *

(e) MARINE POLLUTANT mark. Effective [INSERT DATE ONE YEAR AFTER EFFECTIVE DATE OF FINAL RULE] the MARINE POLLUTANT mark must conform to the following:

(1) Except for size, the MARINE POLLUTANT mark must appear as follows:



Symbol (fish and tree): black on white or suitable contrasting background.

(2) The symbol and border must be black and the background white, or the symbol, border and background must be of contrasting color to the surface to which the mark be affixed. Each side of the mark must be---

(i) At least 100 mm (4 inches) for marks applied to:

(A) Non-bulk packages, except in the case of packages which, because of their size, can only bear smaller marks;

(B) Bulk packages with a capacity of less than 3,785 L (1,000 gallons); or

(ii) At least 250 mm (10 inches) for marks applied to all other bulk packages.

* * * * *

15. In § 172.400a, paragraph (c) is revised to read as follows:

§ 172.400a Exceptions from labeling.

* * * * *

(c) Notwithstanding the provisions of § 172.402(a), a Division 6.1 subsidiary hazard label is not required on a package containing a Class 8 (corrosive) material which has a subsidiary hazard of Division 6.1 (poisonous) if the toxicity of the material is based solely on the corrosive destruction of tissue rather than systemic poisoning. In addition, a Division 4.1 subsidiary hazard label is not required on a package bearing a Division 4.2 label.

* * * * *

16. In § 172.401, a new paragraph (c)(5) is added to read as follows:

§ 172.401 Prohibited labeling.

* * * * *

(c) * * *

(5) The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (IBR, see §171.7 of this subchapter).

* * * * *

17. In § 172.402, paragraph (d)(1) is revised to read as follows:

§ 172.402 Additional labeling requirements.

* * * * *

(d) * * *

(1) For a package containing a Class 7 material that also meets the definition of one or more additional hazard classes, whether or not the material satisfies §173.4a(b)(7) of this subchapter, a subsidiary label is not required on the package if the material conforms to the remaining criteria in § 173.4a of this subchapter.

* * * * *

18. In § 172.446, paragraph (b) is revised to read as follows:

§ 172.446 CLASS 9 Label.

* * * * *

(b) In addition to complying with §172.407, the background on the CLASS 9

label must be white with seven black vertical stripes on the top half. The black vertical stripes must be spaced, so that, visually, they appear equal in width to the six white spaces between them. The lower half of the label must be white with the class number “9” underlined and centered at the bottom. The solid horizontal line dividing the lower and upper half of the label is optional.

19. Section 172.448 is revised to read as follows:

§ 172.448 CARGO AIRCRAFT ONLY label.

(a) Except for size and color, the CARGO AIRCRAFT ONLY label must be as follows:



(b) The CARGO AIRCRAFT ONLY label must be black on an orange background.

(c) A CARGO AIRCRAFT ONLY label conforming to the specifications in

§ 172.448 on December 31, 2008, may be used until January 1, 2013.

20. In § 172.500, paragraph (b)(5) is revised to read as follows:

§ 172.500 Applicability of placarding requirements.

* * * * *

(b) * * *

(5) Hazardous materials which are packaged as small quantities under the provisions of §§ 173.4, 173.4a, 173.4b of this subchapter; and

* * * * *

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

21. The authority citation for part 173 continues to read as follows:

Authority: 49 U.S.C. 5101-5128, 44701; 49 CFR 1.45, 1.53.

22. Section 173.4, is revised to read as follows:

§ 173.4 Small quantities for highway and rail.

(a) When transported domestically by highway or rail in conformance with this section, small quantities of Class 3, Division 4.1, Division 4.2 (PG II and III), Division 4.3 (PG II and III), Division 5.1, Division 5.2, Division 6.1, Class 7, Class 8, and Class 9

materials that also meet the definition of one or more of these hazard classes, are not subject to any other requirements of this subchapter when—

(1) The maximum quantity of material per inner receptacle or article is limited to—

(i) Thirty (30) mL (1 ounce) for authorized liquids, other than Division 6.1, Packing Group I, Hazard Zone A or B materials;

(ii) Thirty (30) g (1 ounce) for authorized solid materials;

(iii) One (1) g (0.04 ounce) for authorized materials meeting the definition of a Division 6.1, Packing Group I, Hazard Zone A or B material; and

(iv) An activity level not exceeding that specified in §§173.421, 173.424, 173.425 or 173.426, as appropriate, for a package containing a Class 7 (radioactive) material.

(2) With the exception of temperature sensing devices, each inner receptacle:

(i) Is not liquid-full at 55 °C (131 °F), and

(ii) Is constructed of plastic having a minimum thickness of no less than 0.2 mm (0.008 inch), or earthenware, glass, or metal;

(3) Each inner receptacle with a removable closure has its closure held securely in place with wire, tape, or other positive means;

(4) Unless equivalent cushioning and absorbent material surrounds the inside packaging, each inner receptacle is securely packed in an inside packaging with cushioning and absorbent material that:

(i) Will not react chemically with the material, and

(ii) Is capable of absorbing the entire contents (if a liquid) of the receptacle;

(5) The inside packaging is securely packed in a strong outside packaging;

(6) The completed package, as demonstrated by prototype testing, is capable of sustaining—

(i) Each of the following free drops made from a height of 1.8 m (5.9 feet) directly onto a solid unyielding surface without breakage or leakage from any inner receptacle and without a substantial reduction in the effectiveness of the package:

(A) One drop flat on bottom;

(B) One drop flat on top;

(C) One drop flat on the long side;

(D) One drop flat on the short side; and

(E) One drop on a corner at the junction of three intersecting edges; and

(ii) A compressive load as specified in §178.606(c) of this subchapter.

Note to paragraph (a)(6): Each of the tests in paragraph (a)(6) of this section may be performed on a different but identical package; *i.e.*, all tests need not be performed on the same package.

(7) Placement of the material in the package or packing different materials in the package does not result in a violation of §173.21;

(8) The gross mass of the completed package does not exceed 29 kg (64 pounds);

(9) The package is not opened or otherwise altered until it is no longer in commerce; and

(10) The shipper certifies conformance with this section by marking the outside of the package with the statement “This package conforms to 49 CFR 173.4 for domestic highway or rail transport only.”

(b) A package containing a Class 7 (radioactive) material also must conform to

the requirements of §173.421(a)(1) through (a)(5) or §173.424(a) through (g), as appropriate.

(c) Packages which contain a Class 2, Division 4.2 (PG I), or Division 4.3 (PG I) material conforming to paragraphs (a)(1) through (a)(10) of this section may be offered for transportation or transported if specifically approved by the Associate Administrator.

(d) Lithium batteries and cells are not eligible for the exceptions provided in this section.

23. Section 173.4a is added to read as follows:

§ 173.4a Excepted Quantities.

(a) Excepted quantities of materials other than articles transported in accordance with this section are not subject to any additional requirements of this subchapter except for:

(1) The shipper's responsibilities to properly class their material in accordance with § 173.22 of this subchapter;

(2) Sections 171.15 and 171.16 of this subchapter pertaining to the reporting of incidents; and

(3) For a Class 7 (Radioactive) material the requirements for an excepted package.

(b) Authorized materials. Only materials authorized for transport aboard passenger aircraft and appropriately classed within one of the following hazard classes or divisions may be transported in accordance with this section:

(1) Division 2.2 materials with no subsidiary hazard;

(2) Class 3 materials;

- (3) Class 4 (PG II and III) materials except for self-reactive materials;
- (4) Division 5.1 (PG II and III);
- (5) Division 5.2 materials only when contained in a chemical kit or a first aid kit;
- (6) Division 6.1, other than PG I, Hazard Zone A or B material;
- (7) Class 7, Radioactive material in excepted packages
- (8) Class 8 (PG II and III), except for UN2803 (Gallium) and UN2809 (Mercury); and
- (9) Class 9, except for UN1845 (Carbon dioxide, solid *or* Dry ice), and lithium batteries and cells.

(c) Inner packaging limits. The maximum quantity of hazardous materials in each inner packaging is limited to:

- (1) 1 g (0.04 ounce) or 1 mL (0.03 ounce) for solids or liquids of Division 6.1, Packing Group I or II or other materials that also meet the definition of a toxic material;
- (2) 30 g (1 ounce) or 30 mL (1 ounce) for solids or liquids other than those covered in paragraph (c)(1) of this section; and
- (3) For gases a water capacity of 30 mL (1.8 cubic inches) or less.

(d) Outer packaging aggregate quantity limits. The maximum aggregate quantity of hazardous material contained in each outer packaging must not exceed the limits provided in the following paragraphs. For outer packagings containing more than one hazardous material, the aggregate quantity of hazardous material must not exceed the lowest permitted maximum aggregate quantity. The limits are as follows:

- (1) For other than a Division 2.2 or Division 5.2 material:
 - (i) Packing Group I — 300 g (0.66 pounds) for solids or 300 mL (0.08 gallons) for liquids;

(ii) Packing Group II — 500 g (1.1 pounds) for solids or 500 mL (0.1 gallons) for liquids;
(iii) Packing Group III — 1 kg (2.2 pounds) for solids or 1 L (0.2 gallons) for liquids;
(2) For Division 2.2 material, 1 L (61 cubic inches); or
(3) For Division 5.2 material, 500 g (1.1 pounds) for solids or 250 mL (0.05 gallons) for liquids.

(e) Packaging materials. Packagings used for the transport of excepted quantities must meet the following:

(1) Each inner receptacle must be constructed of plastic, or of glass, porcelain, stoneware, earthenware or metal. When used for liquid hazardous materials, plastic inner packagings must have a thickness of not less than 0.2 mm (0.008 inch).

(2) Each inner packaging with a removable closure must have its closure held securely in place with wire, tape or other positive means. Each inner receptacle having a neck with molded screw threads must have a leak proof, threaded type cap. The closure must not react chemically with the material.

(3) Each inner packaging must be securely packed in an intermediate packaging with cushioning material in such a way that, under normal conditions of transport, it cannot break, be punctured or leak its contents. The intermediate packaging must completely contain the contents in case of breakage or leakage, regardless of package orientation. For liquid hazardous materials, the intermediate packaging must contain sufficient absorbent material that:

(i) Will absorb the entire contents of the inner packaging. In such cases, and
(ii) Will not react dangerously with the material or reduce the integrity or function of the packaging materials.

(iii) The absorbent material may be the cushioning material.

(4) The intermediate packaging must be securely packed in a strong, rigid outer packaging.

(5) Placement of the material in the package or packing different materials in the package must not result in a violation of §173.21.

(6) Each package must be of such a size that there is adequate space to apply all necessary markings.

(7) The package is not opened or otherwise altered until it is no longer in commerce.

(8) Overpacks may be used and may also contain packages of hazardous material or other materials not subject to the HMR subject to the requirements of § 173.25.

(f) Package tests. The completed package as prepared for transport, with inner packagings filled to not less than 95% of their capacity for solids or 98% for liquids, must be capable of withstanding, as demonstrated by testing which is appropriately documented, without breakage or leakage of any inner packaging and without significant reduction in effectiveness:

(1) Drops onto a solid unyielding surface from a height of 1.8 m (5.9 feet):

(i) Where the sample is in the shape of a box, it must be dropped in each of the following orientations:

(A) One drop flat on the bottom;

(B) One drop flat on the top;

(C) One drop flat on the longest side;

(D) One drop flat on the shortest side; and

(E) One drop on a corner at the junction of three intersecting edges.

(ii) Where the sample is in the shape of a drum, it must be dropped in each of the following orientations:

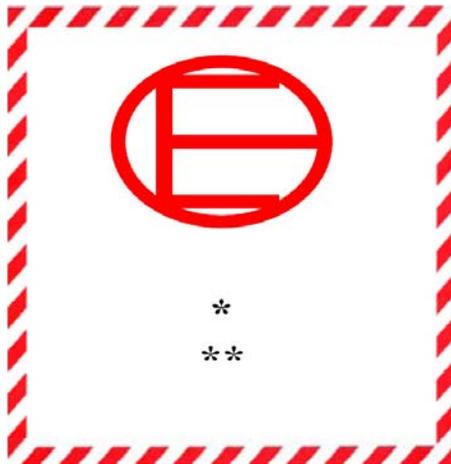
(A) One drop diagonally on the top chime, with the center of gravity directly above the point of impact;

(B) One drop diagonally on the base chime; and

(C) One drop flat on the side.

(2) A compressive load as specified in § 178.606(c) of this subchapter. Each of the tests in this paragraph (f) may be performed on a different but identical package; that is, all tests need not be performed on the same package.

(g) Marking. Excepted quantities of hazardous materials packaged, marked, and otherwise offered and transported in accordance with this section must be durably and legibly marked with the following marking:



(1) The “*” must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The “**” must be replaced by the name of the shipper or consignee if not shown elsewhere on the package.

(2) The symbol shall be not less than 100 mm (3.9 inches) x 100 mm (3.9 inches), and must be durable and clearly visible.

(h) Documentation.

(1) For transportation by highway or rail, no shipping paper is required.

(2) For transport by air, a shipping paper is not required, except that, if a document such as an air waybill accompanies a shipment, the document must include the statement “Dangerous Goods in Excepted Quantities” and indicate the number of packages.

(3) For transport by vessel, a shipping paper is required and must include the statement “Dangerous Goods in Excepted Quantities” and indicate the number of packages.

(i) Training. Each person who offers or transports excepted quantities of hazardous materials must know about the requirements of this section.

(j) Restrictions. Hazardous material packaged in accordance with this section may not be carried in checked or carry-on baggage.

24. Section 173.4b is added to read as follows:

§ 173.4b De minimis exceptions.

(a) Packing Group II and III materials in Class 3, Division 4.1, Division 4.2, Division 4.3, Division 5.1, Division 6.1, Class 8, and Class 9 do not meet the definition of a hazardous material in §171.8 of this subchapter when packaged in accordance with this section and, therefore, are not subject to the requirements of this subchapter.

(1) The maximum quantity of material per inner receptacle or article is limited to—

(i) One (1) mL (0.03 ounce) for authorized liquids; and

(ii) One (1) g (0.04 ounce) for authorized solid materials;

(2) Each inner receptacle with a removable closure has its closure held securely in place with wire, tape, or other positive means;

(3) Unless equivalent cushioning and absorbent material surrounds the inside packaging, each inner receptacle is securely packed in an inside packaging with cushioning and absorbent material that:

(i) Will not react chemically with the material, and

(ii) Is capable of absorbing the entire contents (if a liquid) of the receptacle;

(4) The inside packaging is securely packed in a strong outside packaging;

(5) The completed package is capable of sustaining—

(i) Each of the following free drops made from a height of 1.8 m (5.9 feet) directly onto a solid unyielding surface without breakage or leakage from any inner receptacle and without a substantial reduction in the effectiveness of the package:

(A) One drop flat on bottom;

(B) One drop flat on top;

(C) One drop flat on the long side;

(D) One drop flat on the short side; and

(E) One drop on a corner at the junction of three intersecting edges; and

(ii) A compressive load as specified in §178.606(c) of this subchapter. Each of the tests in this paragraph (a)(5) may be performed on a different but identical package; that is, all tests need not be performed on the same package.

(6) Placement of the material in the package or packing different materials in the package does not result in a violation of §173.21;

(7) The aggregate quantity of hazardous material per package does not exceed 100 g (0.22 pounds) for solids or 100 mL (3.38 ounces) for liquids;

(8) The gross mass of the completed package does not exceed 29 kg (64 pounds);

(9) The package is not opened or otherwise altered until it is no longer in commerce; and

(10) For transportation by aircraft:

(i) The hazardous material is authorized to be carried aboard passenger-carrying aircraft in Column 9A of the § 172.101 Hazardous Materials Table; and

(ii) Material packed in accordance with this section may not be carried in checked or carry-on baggage.

(b) [Reserved]

25. In § 173.12, as amended on January 28, 2008, paragraph (f) is revised to read as follows:

§ 173.12 Exceptions for shipment of waste materials.

* * * * *

(f) Household waste. Household waste, as defined in § 171.8 of this subchapter, is not subject to the requirements of this subchapter when transported in accordance with applicable state, local, or tribal requirements.

26. In § 173.21, paragraph (c) is revised to read a follows:

§ 173.21 Forbidden materials and packages.

* * * * *

(c) Electrical devices, such as batteries and battery-powered devices, which are likely to create sparks or generate a dangerous evolution of heat, unless packaged in a manner which precludes such an occurrence.

* * * * *

27. In § 173.24, paragraph (c)(2) is revised to read as follows:

§ 173.24 General requirements for packagings and packages.

* * * * *

(c) * * *

(2) The packaging is permitted under, and conforms to, provisions contained in subparts

B or C of part 171 of this subchapter or §§ 173.3, 173.4, 173.4a, 173.4b, 173.5, 173.5a, 173.6, 173.7, 173.8, 173.27, or §176.11 of this subchapter.

* * * * *

28. In § 173.24b, paragraph (e) is redesignated as paragraph (f) and revised, and a new paragraph (e) is added to read as follows:

§ 173.24b Additional general requirements for bulk packagings.

* * * * *

(e) Stacking of IBCs and Large Packagings:

(1) IBCs and Large Packagings not designed and tested to be stacked. No packages or freight (hazardous or otherwise) may be stacked upon an IBC or a Large Packaging that was not designed and tested to be stacked upon.

(2) IBCs and Large Packagings designed and tested to be stacked. The superimposed weight placed upon an IBC or a Large Packaging designed to be stacked may not exceed the maximum permissible stacking test mass marked on the packaging.

(f) UN portable tanks. (1) A UN portable tank manufactured in the United States must conform in all details to the applicable requirements in parts 172, 173, 178 and 180 of this subchapter.

(2) UN portable tanks manufactured outside the United States. A UN portable tank manufactured outside the United States, in accordance with national or international regulations based on the UN Recommendations (IBR, see §171.7 of this subchapter), which is an authorized packaging under §173.24 of this subchapter, may be filled, offered

and transported in the United States, if the §172.101 Table of this subchapter authorizes the hazardous material for transportation in the UN portable tank and it conforms to the applicable T codes, and tank provision codes, or other special provisions assigned to the hazardous material in Column (7) of the Table. In addition, the portable tank must—

- (i) Conform to applicable provisions in the UN Recommendations (IBR, see §171.7 of this subchapter) and the requirements of this subpart;
- (ii) Be capable of passing the prescribed tests and inspections in part 180 of this subchapter applicable to the UN portable tank specification;
- (iii) Be designed and manufactured according to the ASME Code (IBR, see §171.7 of this subchapter) or a pressure vessel design code approved by the Associate Administrator;
- (iv) Be approved by the Associate Administrator when the portable tank is designed and constructed under the provisions of an alternative arrangement (see §178.274(a)(2) of this subchapter); and
- (v) The competent authority of the country of manufacture must provide reciprocal treatment for UN portable tanks manufactured in the United States.

29. In § 173.62, in paragraph (b), the Explosives Table is amended by adding entries in the appropriate numerical order, and in paragraph (c), in the Table of Packing Methods, packing instruction entry 114(b) is revised to read as follows:

§ 173.62 Specific packaging requirements for explosives.

* * * * *

(b) * * *

EXPLOSIVES TABLE

ID#	PI
* * * * *	* *
UN0505	135
UN0506	135
UN0507	135
UN0508	114(b)
UN0509	114(b)
* * * * *	* *

(c) * * *

(5) * * *

TABLE OF PACKING METHODS--CONTINUED

Packing Instruction	Inner packagings	Intermediate packagings	Outer packagings
* * * * *	* *		
114(b) This packing instruction applies to dry solids PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS: 1. For UN 0077, 0132, 0234, 0235 and 0236, packagings must be lead free 2. For UN 0160 and UN 0161, when metal drums (1A2 or 1B2) are used as the outer packaging, metal pack-agings must be so constructed that the risk of explosion, by reason of increased internal pressure from internal or external causes is pre-vented 3. For UN 0160, UN 0161, and UN0508, inner packagings are not necessary if drums are used as the outer packaging 4. For UN 0508 and UN0509, metal packagings shall not be used	Bags..... paper, kraft plastics textile, sift-proof woven plastics, sift-proof Receptacles..... fibreboard metal paper plastics woven plastics, sift-proof	Not necessary.....	Boxes. natural wood, ordinary (4C1). natural wood, sift proof walls (4C2) plywood (4D). reconstituted wood (4F). fibreboard (4G). Drums. steel, removable head (1A2). aluminum, remov-able head (1B2) plywood (1D). fibre (1G). plastics, remov- able head (1H2)
* * * * *	* *		

30. In § 173.115, paragraph (b) is revised, (k) is redesignated as new paragraph (l),
and new paragraph (k) is added to read as follows:

§ 173.115 Class 2, Divisions 2.1, 2.2, and 2.3—Definitions.

* * * * *

(b) Division 2.2 (non-flammable, nonpoisonous compressed gas—including

compressed gas, liquefied gas, pressurized cryogenic gas, compressed gas in solution, asphyxiant gas and oxidizing gas). For the purpose of this subchapter, a non-flammable, nonpoisonous compressed gas (Division 2.2) means any material (or mixture) which—

(1) Exerts in the packaging a gauge pressure of 200 kPa (25.9 psig/43.8 psia) or greater at 20 °C (68 °F), is a liquefied gas or is a cryogenic liquid, and

(2) Does not meet the definition of Division 2.1 or 2.3.

* * * * *

(k) For Division 2.2 gases, the oxidizing ability shall be determined by tests or by calculation in accordance with ISO 10156:1996 and ISO 10156-2:2005 (IBR, see § 171.7 of this subchapter).

(l) The following applies to aerosols (see §171.8 of this subchapter):

(1) An aerosol must be assigned to Division 2.1 if the contents include 85% by mass or more flammable components and the chemical heat of combustion is 30 kJ/g or more;

(2) An aerosol must be assigned to Division 2.2 if the contents contain 1% by mass or less flammable components and the heat of combustion is less than 20 kJ/g.

(3) Aerosols not meeting the provisions of paragraphs (a) or (b) of this section must be classed in accordance with the appropriate tests of the UN Manual of Tests and Criteria (IBR, see §171.7 of this subchapter). An aerosol which was tested in accordance with the requirements of this subchapter in effect on December 31, 2005, is not required to be retested.

(4) Division 2.3 gases may not be transported in an aerosol container.

(5) When the contents are classified as Division 6.1, PG III or Class 8, PG II or III, the aerosol must be assigned a subsidiary hazard of Division 6.1 or Class 8, as appropriate.

(6) Substances of Division 6.1, PG I or II, and substances of Class 8, PG I are forbidden from transportation in an aerosol container.

(7) Flammable components are Class 3 flammable liquids, Division 4.1 flammable solids, or Division 2.1 flammable gases. The chemical heat of combustion must be determined in accordance with the UN Manual of Tests and Criteria (IBR, see §171.7 of this subchapter).

* * * * *

31. In § 173.134, as amended on January 28, 2008, paragraph (b)(13)(i) is revised to read as follows:

§ 173.134 Class 6, Division 6.2 – Definitions and exceptions.

* * * * *

(b) * * *

(13) * * *

(i) Household waste as defined in § 171.8, when transported in accordance with applicable state, local, or tribal requirements.

* * * * *

32. In § 173.137, paragraph (c)(2) is revised and a note to the section is added to read as follows:

§ 173.137 Class 8—Assignment of packing group.

* * * * *
(c) * * *

(2) That do not cause full thickness destruction of intact skin tissue but exhibit a corrosion on either steel or aluminum surfaces exceeding 6.25 mm (0.25 inch) a year at a test temperature of 55 °C (130 °F) when tested on both materials. The corrosion may be determined in accordance with the UN Manual of Tests and Criteria (IBR, see §171.7 of this subchapter) or other equivalent test methods.

NOTE to § 173.137: When an initial test on either a steel or aluminum surface indicates the material being tested is corrosive, the follow up test on the other surface is not required.

33. Section 173.159 is revised to read as follows:

§ 173.159 Batteries, wet.

(a) Electric storage batteries, containing electrolyte acid or alkaline corrosive battery fluid (wet batteries), may not be packed with other materials except as provided in paragraphs (g) and (h) of this section and in §§ 173.220 and 173.222; and any battery or battery-powered device must be prepared and packaged for transport in a manner to prevent:

(1) A dangerous evolution of heat (i.e., an amount of heat sufficient to be dangerous to

packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence);

(2) Short circuits, including, but not limited to:

(i) Packaging each battery or each battery-powered device when practicable, in fully enclosed inner packagings made of non-conductive material;

(ii) Separating or packaging batteries and battery-powered devices in a manner to prevent contact with other batteries, devices or conductive materials (e.g., metal) in the packagings; or

(iii) Ensuring exposed terminals are protected with non-conductive caps, non-conductive tape, or by other appropriate means; and

(3) Damage to terminals. If not impact resistant, the outer packaging must not be used as the sole means of protecting the battery terminals from damage or short circuiting. Batteries must be securely cushioned and packed to prevent shifting which could loosen terminal caps or reorient the terminals. Batteries contained in devices must be securely installed. Terminal protection methods include but are not limited to:

(i) Securely attaching covers of sufficient strength to protect the terminals;

(ii) Packaging the battery in a rigid plastic packaging; or

(iii) Constructing the battery with terminals that are recessed or otherwise protected so that the terminals will not be subjected to damage if the package is dropped.

(b) For transportation by aircraft:

(1) The packaging for wet batteries must incorporate an acid- or alkali- proof liner, or include a supplementary packaging with sufficient strength and

adequately sealed to prevent leakage of electrolyte fluid in the event of spillage;

and

(2) Any battery-powered device, equipment or vehicle must be packaged for transport in a manner to prevent unintentional activation or must have an independent means of preventing unintentional activation (e.g., packaging restricts access to activation switch, switch caps or locks, recessed switches, trigger locks, temperature sensitive circuit breakers, etc.). (c) The following specification packagings are authorized for batteries packed without other materials provided all requirements of paragraph (a) of this section, and for transportation by aircraft, paragraph (b) of this section are met:

(1) Wooden box: 4C1, 4C2, 4D, or 4F

(2) Fiberboard box: 4G

(3) Plywood drum: 1D

(4) Fiber drum: 1G

(5) Plastic drum: 1H2

(6) Plastic jerrican: 3H2

(7) Plastic box: 4H2

(d) The following non-specification packagings are authorized for batteries packed without other materials provided all requirements of paragraph (a) of this section, and for transportation by aircraft, paragraph (b) of this section are met:

(1) Electric storage batteries are firmly secured to skids or pallets capable of withstanding the shocks normally incident to transportation are authorized for transportation by rail, highway, or vessel. The height of the completed unit must not exceed 1½ times the width of the skid or pallet. The unit must be capable of withstanding, without damage, a superimposed weight equal to two times the weight of the unit or, if the weight of the unit exceeds 907 kg (2000 pounds), a

superimposed weight of 1814 kg (4000 pounds). Battery terminals must not be relied upon to support any part of the superimposed weight and must not short out if a conductive material is placed in direct contact with them.

(2) Electric storage batteries weighing 225 kg (500 pounds) or more, consisting of carriers' equipment, may be shipped by rail when mounted on suitable skids. Such shipments may not be offered in interchange service.

(3) One to three batteries not over 11.3 kg (25 pounds) each, packed in strong outer boxes. The maximum authorized gross weight is 34 kg (75 pounds).

(4) Not more than four batteries not over 7 kg (15 pounds) each, packed in strong outer fiberboard or wooden boxes. The maximum authorized gross weight is 30 kg (65 pounds).

(5) Not more than five batteries not over 4.5 kg (10 pounds) each, packed in strong outer fiberboard or wooden boxes. The maximum authorized gross weight is 30 kg (65 pounds).

(6) Single batteries not exceeding 34 kg (75 pounds) each, packed in 5-sided slip covers or in completely closed fiberboard boxes. Slip covers and boxes must be of solid or double-faced corrugated fiberboard of a least 91 kg (200 pounds) Mullen test strength. The slip cover or fiberboard box must fit snugly and provide inside top clearance of at least 1.3 cm (0.5 inch) above battery terminals and filler caps with reinforcement in place. Assembled for shipment, the bottom edges of the slipcover must come to within 2.5 cm (1 inch) of the bottom of the battery. The completed package (battery and box or slip cover) must be capable of withstanding a top-to-bottom compression test of at least 225 kg (500 pounds) without damage to battery terminal caps, cell covers or filler caps.

(7) Single batteries exceeding 34 kg (75 pounds) each may be packed in completely closed fiberboard boxes. Boxes must be of double-wall corrugated fiberboard of at least 181 kg (400 pounds) test, or solid fiberboard testing at least 181 kg (400 pounds); a box may have hand holes in its ends provided that the hand holes will not materially weaken the box. Sides and ends of the box must have cushioning between the battery and walls of the box; combined thickness of cushioning material and walls of the box must not be less than 1.3 cm (0.5 inch); and cushioning must be excelsior pads, corrugated fiberboard, or other suitable cushioning material. The bottom of the battery must be protected by a minimum of one excelsior pad or by a double-wall corrugated fiberboard pad. The top of the battery must be protected by a wood frame, corrugated trays or scored sheets of corrugated fiberboard having minimum test of 91 kg (200 pounds), or other equally effective cushioning material. Top protection must bear evenly on connectors and/or edges of the battery cover to facilitate stacking of batteries. No more than one battery may be placed in one box. The maximum authorized gross weight is 91 kg (200 pounds).

(e) When transported by highway or rail, electric storage batteries containing electrolyte or corrosive battery fluid are not subject to any other requirements of this subchapter, if all of the following are met:

- (1) No other hazardous materials may be transported in the same vehicle;
- (2) The batteries must be loaded or braced so as to prevent damage and short circuits in transit;
- (3) Any other material loaded in the same vehicle must be blocked, braced, or otherwise secured to prevent contact with or damage to the batteries; and

(4) The transport vehicle may not carry material shipped by any person other than the shipper of the batteries.

(f) Batteries can be considered as non-spillable provided they are capable of withstanding the following two tests, without leakage of battery fluid from the battery:

(1) Vibration test. The battery must be rigidly clamped to the platform of a vibration machine, and a simple harmonic motion having an amplitude of 0.8 mm (0.03 inches) with a 1.6 mm (0.063 inches) maximum total excursion must be applied. The frequency must be varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return must be traversed in 95 ± 5 minutes for each mounting position (direction of vibrator) of the battery. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

(2) Pressure differential test. Following the vibration test, the battery must be stored for six hours at $24 \text{ }^\circ\text{C} \pm 4 \text{ }^\circ\text{C}$ ($75 \text{ }^\circ\text{F} \pm 7 \text{ }^\circ\text{F}$) while subjected to a pressure differential of at least 88 kPa (13 psig). The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

(g) Electrolyte, acid or alkaline corrosive battery fluid, packed with batteries wet or dry, must be packed in one of the following specification packagings:

(1) In 4C1, 4C2, 4D, or 4F wooden boxes with inner receptacles of glass, not over 4.0 L (1 gallon) each with not over 8.0 L (2 gallons) total in each outside container. Inside containers must be well-cushioned and separated from batteries by a strong solid wooden partition. The completed package must conform to Packing Group III requirements.

(2) Electrolyte, acid, or alkaline corrosive battery fluid included with electric storage batteries and filling kits may be packed in strong rigid outer packagings when shipments are made by, for, or to the Departments of the Army, Navy, or Air Force of the United States. Packagings must conform to military specifications. The electrolyte, acid, or alkaline corrosive battery fluid must be packed in polyethylene bottles of not over 1.0 L (0.3 gallon) capacity each. Not more than 24 bottles, securely separated from electric storage batteries and kits, may be offered for transportation or transported in each package.

(3) In 4G fiberboard boxes with not more than 12 inside packagings of polyethylene or other material resistant to the lading, each not over 2.0 L (0.5 gallon) capacity each. Completed packages must conform to Packing Group III requirements. Inner packagings must be adequately separated from the storage battery. The maximum authorized gross weight is 29 kg (64 pounds). These packages are not authorized for transportation by aircraft.

(h) Dry batteries or battery charger devices may be packaged in 4G fiberboard boxes with inner receptacles containing battery fluid. Completed packagings must conform to Packing Group III requirements. Not more than 12 inner receptacles may be packed in one outer box. The maximum authorized gross weight is 34 kg (75 pounds).

(i) When approved by the Associate Administrator, electric storage batteries, containing electrolyte or corrosive battery fluid in a separate reservoir from which fluid is injected into the battery cells by a power device cartridge assembled with the battery, and

which meet the criteria of paragraph (f) are not subject to any other requirements of this subchapter.

34. A new § 173.159a is added to read as follows:

§ 173.159a Exceptions for Non-spillable batteries.

(a) Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 table or in a packaging section in this part.

(b) Non-spillable batteries offered for transportation or transported in accordance with this section are subject to the incident reporting requirements. For transportation by aircraft, a telephone report in accordance with § 171.15(a) is required if a fire, violent rupture, explosion or dangerous evolution of heat (i.e., an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a nonspillable battery. For all modes of transportation, a written report in accordance with § 171.16(a) is required if a fire, violent rupture, explosion or dangerous evolution of heat occurs as a direct result of a nonspillable battery.

(c) Non-spillable batteries are excepted from the packaging requirements of § 173.159 under the following conditions:

(1) Non-spillable batteries must be securely packed in strong outer packagings and meet the requirements of § 173.159(a). A non-spillable battery which is an integral part of and necessary for the operation of mechanical or electronic equipment must be securely fastened in

the battery holder on the equipment;

(2) The battery and outer packaging must be plainly and durably marked “NONSPILLABLE” or “NONSPILLABLE BATTERY.” The requirement to mark the outer package does not apply when the battery is installed in a piece of equipment that is transported unpackaged.

(d) Non-spillable batteries are excepted from all other requirements of this subchapter when offered for transportation and transported in accordance with paragraph (c) of this section and the following:

(1) At a temperature of 55 °C (131 °F), the battery must not contain any unabsorbed free-flowing liquid, and must be designed so that electrolyte will not flow from a ruptured or cracked case; and

(2) For transport by aircraft, when contained in a battery-powered device, equipment or vehicle must be prepared and packaged for transport in a manner to prevent unintentional activation in conformance with § 173.159(b)(2) of this Subpart.

35. In § 173.168, paragraph (a) is corrected to read as follows:

§ 173.168 Chemical oxygen generators.

* * * * *

(a) Approval. A chemical oxygen generator that is shipped with an explosive or non-explosive means of initiation attached must be classed and approved by the Associate Administrator in accordance with the procedures specified in § 173.56 of this subchapter.

36. In § 173.189, paragraph (e) is revised to read as follows:

§ 173.189 Batteries containing sodium or cells containing sodium.

* * * * *

(e) Vehicles, machinery and equipment powered by sodium batteries must be consigned under the entry “Battery-powered vehicle or Battery-powered equipment.”

37. In § 173.196, paragraphs (a)(1) and (a)(2) are revised to read as follows:

§ 173.196 Category A infectious substances.

(a) * * *

(1) A leakproof primary receptacle.

(2) A leakproof secondary packaging. If multiple fragile primary receptacles are placed in a single secondary packaging, they must be either wrapped individually or separated to prevent contact between them.

* * * * *

38. In Subpart E of Part 173, a new § 173.206 is added to read as follows:

§ 173.206 Packaging requirements for chlorosilanes.

(a) When § 172.101 of this subchapter specifies that a hazardous material be packaged

under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I or II performance level (unless otherwise excepted), and to the particular requirements of the special provisions of Column (7) of the § 172.101 Table.

(b) The following combination packagings are authorized:

Outer packagings:

Steel drum: 1A2

Plastic drum: 1H2

Plywood drum: 1D

Fiber drum: 1G

Steel box: 4A

Natural wood box: 4C1 or 4C2

Plywood box: 4D

Reconstituted wood box: 4F

Fiberboard box: 4G

Expanded plastic box: 4H1

Solid plastic box: 4H2

Inner packagings:

Glass or Steel receptacle

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1

Steel jerrican: 3A1

Plastic receptacle in steel drum: 6HA1

39. In § 173.220, paragraphs (a)(2), (c), (d), and (e)(1), and the last two sentences of paragraph (g)(2) are revised to read as follows:

§ 173.220 Internal combustion engines, self-propelled vehicles, mechanical equipment containing internal combustion engines, and battery-powered vehicles or equipment.

(a) * * *

(2) It is equipped with a wet battery (including a non-spillable battery), a sodium battery or lithium battery; or

* * * * *

(c) Battery-powered or installed. Batteries must be securely installed, and wet batteries must be fastened in an upright position. Batteries must be protected against a dangerous evolution of heat, short circuits, and damage to terminals in conformance with § 173.159(a) and leakage; or must be removed and packaged separately under § 173.159. Battery-powered vehicles, machinery or equipment including battery-powered wheelchairs and mobility aids are not subject to any other requirements of this subchapter except § 173.21 when transported by rail, highway or vessel.

(d) Lithium batteries. Except as provided in § 173.185 of this subchapter, vehicles, engines and machinery powered by lithium metal batteries that are transported with these batteries installed are forbidden aboard passenger-carrying aircraft. Lithium batteries contained in vehicles, engines or mechanical equipment must be securely fastened in the

battery holder of the vehicle, engine or mechanical equipment and be protected in such a manner as to prevent damage and short circuits (e.g., by the use of non-conductive caps that cover the terminals entirely). Lithium batteries must be of a type that have successfully passed each test in the UN Manual of Tests and Criteria as specified in §173.185, unless approved by the Associate Administrator. Equipment (other than vehicles, engines or mechanical equipment) containing lithium batteries, must be described as “Lithium batteries contained in equipment” and transported in accordance with § 173.185 and applicable special provisions.

(e) Other hazardous materials. (1) Items containing hazardous materials, such as, fire extinguishers, compressed gas accumulators, safety devices and other hazardous materials which are integral components of the motor vehicle, engine or mechanical equipment and are necessary for the operation of the vehicle, engine or mechanical equipment, or for the safety of its operator or passengers must be securely installed in the motor vehicle, engine or mechanical equipment. Such items are not otherwise subject to the requirements of this subchapter. Equipment (other than vehicles, engines or mechanical equipment) containing lithium batteries must be described as “Lithium batteries contained in equipment” and transported in accordance with § 173.185 and applicable special provisions.

* * * * *

(g) * * *

(2) * * * For transportation by aircraft, the provisions of

§ 173.159(b)(2) as applicable, other applicable requirements of this subchapter, including shipping papers, emergency response information, notification of pilot-in-command, general packaging requirements, and the requirements specified in § 173.27 must be met. For transportation by vessel, additional exceptions are specified in § 176.905 of this subchapter.

40. In § 173.222, the section heading and paragraph (c)(3) are revised to read as follows:

§ 173.222 Dangerous goods in equipment, machinery or apparatus.

* * * * *

(c) * * *

(3) 0.5 kg (1.1 pounds) in the case of Division 2.2 gases. For transportation by aircraft, Division 2.2 gases with subsidiary risks and refrigerated liquefied gases are not authorized; and

* * * * *

41. a. In § 173.225, in paragraph (c)(8), the Organic Peroxide Table is amended by removing and adding the following entries in the appropriate order; and in the “NOTES” immediately following the Table, a new Note “29,” “30” and “31” are added in the appropriate numerical order.

b. In paragraph (e), the Organic Peroxide IBC Table is amended by removing and adding the following entries in the appropriate order.

c. In paragraph (g), the Organic Peroxide Portable Tank Table is amended by adding and revising the following entries in the appropriate order.

§ 173.225 Packaging requirements and other provisions for organic peroxides.

* * * * *

(c) * * *

(8) * * *

* * * * *										
tert-Amyl peroxyneodecanoate	3119	≤ 47	≥ 53				OP8	0	+10	
* * * * *										
tert-Amyl peroxy-pivalate	3119	≤ 32	≥ 68				OP8	+10	+15	
* * * * *										
tert-Amyl peroxy-3,5,5-trimethylhexanoate	3105	≤ 100					OP7			
* * * * *										
tert-Butyl peroxy-3,5,5-trimethylhexanoate	3106	≤ 42			≥ 58		OP7			
* * * * *										
Cumyl peroxyneodecanoate	3115	≤ 87	≥ 13				OP7	-10	0	
* * * * *										
Cyclohexanone peroxide(s)	Exempt	≤ 32			≥ 68		Exempt			29
* * * * *										
2,2-Di-(tert-amylperoxy)-butane	3105	≤ 57	≥ 43				OP7			
* * * * *										
Dibenzoyl peroxide	Exempt	≤ 35			≥ 65		Exempt			29
* * * * *										
tert-Butyl peroxybenzoate	3109	≤ 32	≥ 68				OP8			
* * * * *										
1,1-Di-(tert-butylperoxy)-cyclohexane	3103	≤ 72		≥ 28			OP5			30
* * * * *										
1,1-Di-(tert-Butylperoxy) cyclohexane	3109	≤ 37	≥ 63				OP8			
* * * * *										

1,1-Di-(tert-butylperoxy)- Cyclohexane + tert-butyl peroxy-2-ethylhexanoate * * * * *	3105	≤ 43 $+ \leq 16$	≥ 41				OP7			
Di-(2-tert- butylperoxyisopropyl) benzene(s) * * * * *	Exempt	≤ 42			≥ 58		Exempt			29
1,1-Di-(tert-butylperoxy)- 3,3,5-trimethylcyclohexane * * * * *	3103	≤ 90		≥ 10			OP5			30
Di-2,4-dichlorobenzoyl peroxide [as a paste] * * * * *	3118	≤ 52					OP8	+20	+25	
Di-4-chlorobenzoyl peroxide * * * * *	Exempt	≤ 32			> 68		Exempt			29
Dicumyl peroxide * * * * *	Exempt	≤ 52			≥ 48		Exempt			29
Di-(2-ethylhexyl) peroxydicarbonate [as a stable dispersion in water] * * * * *	3119	≤ 62					OP8	-15	-5	
Di-(2-neodecanoyl- peroxyisopropyl) benzene, as stable dispersion in water * * * * *	3119	≤ 42					OP8	-15	-5	
3-Hydroxy-1,1- dimethylbutyl peroxyneodecanoate * * * * *	3115	≤ 77	≥ 23				OP7	-5	+5	

3-Hydroxy-1,1-dimethylbutyl peroxyneodecanoate [as a stable dispersion in water]	3119	≤ 52					OP8	-5	+5	
* * * * *										
3-Hydroxy-1,1-dimethylbutyl peroxyneodecanoate	3117	≤ 52	≥ 48				OP8	-5	+5	
* * * * *										
Methyl isopropyl ketone peroxide(s)	3109	(See remark 31)	≥ 70				OP8			31
* * * * *										
3,3,5,7,7-Pentamethyl-1,2,4-Trioxepane	3107	≤ 100					OP8			
* * * * *										

Notes

* * * * *

29. Not subject to the requirements of this subchapter for Division 5.2.

30. Diluent type B with boiling point > 130 °C (266 °F).

31. Available oxygen $\leq 6.7\%$.

* * * * *

(e) * * *

Organic Peroxide IBC Table

UN No.	Organic peroxide	Type of IBC	Maximum quantity (litres)	Control temperature	Emergency temperature
[Remove]					
	* * * * *				
3109	ORGANIC PEROXIDE, TYPE F, LIQUID				
	* * * * *				
	tert-Butyl peroxy-3,5,5-trimethylhexanoate, not more than 32% in diluent type A	31A	1250		
		31HA1	1000		
	* * * * *				
3119	ORGANIC PEROXIDE, TYPE F, LIQUID, TEMPERATURE CONTROLLED				
	* * * * *				
	tert-Butyl peroxyneodecanoate, not more than 42%, stable dispersion, in water	31A	1250	-5 °C	+5 °C
	Di-(2-ethylhexyl) peroxydicarbonate, not more than 52%, stable dispersion, in water	31A	1250	-20 °C	-10 °C
	* * * * *				
[Add]					
	* * * * *				
3109	ORGANIC PEROXIDE, TYPE F, LIQUID				

	* * * * *				
	tert-Butyl peroxybenzoate, not more than 32% in diluent type A	31A	1250		
	* * * * *				
	tert-Butyl peroxy-3,5,5-trimethylhexanoate, not more than 37% in diluent type A	31A	1250		
		31HA1	1000		
	* * * * *				
	1,1-Di-(tert-Butylperoxy) cyclohexane, not more than 37% in diluent type A	31A	1250		
	* * * * *				
3119	ORGANIC PEROXIDE, TYPE F, LIQUID, TEMPERATURE CONTROLLED				
	* * * * *				
	tert-Amyl peroxy-pivalate, not more than 32% in diluent type A	31A	1250	+10 °C	+15 °C
	* * * * *				
	tert-Butyl peroxyneodecanoate, not more than 52%, stable dispersion, in water	31A	1250	-5 °C	+5 °C
	* * * * *				
	Di-(2-ethylhexyl) peroxydicarbonate, not more than 62%, stable dispersion, in water	31A	1250	-20 °C	-10 °C
	* * * * *				
	Di-(2-neodecanoylperoxyisopropyl) benzene, not more than 42%, stable dispersion, in water	31A	1250	-15 °C	-5 °C

	* * * * *				
	3-Hydroxy-1,1-dimethylbutyl peroxy-neodecanoate, not more than 52%, stable dispersion, in water	31A	1250	-15 °C	-5 °C
	* * * * *				

* * * * *

(g) * * *

Organic Peroxide Portable Tank Table

UN No.	Hazardous Material	Minimum test pressure (bar)	Minimum shell thickness (mm-reference steel) See...	Bottom opening requirements See...	Pressure relief requirements See...	Filling limits	Control temperature	Emergency temperature
[Remove]								
* * * * *								
3119	ORGANIC PEROXIDE, TYPE F, LIQUID, TEMPERATURE							

	CONTROLL ED							
	Di-(3,5,5- trimethyl- hexanoyl) peroxide, not more than 38% in diluent type A	4	§178.274 (d)(2)	§178.275 (d)(3)	§178.275 (g)(1)	Not more than 90% at 59 °F (15 °C)	0 °C	+5 °C
* * * * *								
[Add]								
* * * * *								
3119	ORGANIC PEROXIDE, TYPE F, LIQUID, TEMPERAT URE CONTROLL ED							
	tert-Amyl peroxyneodec anoate, not more than 47% in diluent type A	4	§178.274 (d)(2)	§178.275 (d)(3)	§178.275 (g)(1)	Not more than 90% at 59 °F (15 °C)	-10 °C	-5 °C
* * * * *								
	Di-(3,5,5- trimethyl- hexanoyl)	4	§178.274 (d)(2)	§178.275 (d)(3)	§178.275 (g)(1)	Not more than	0 °C	+5 °C

	peroxide, not more than 38% in diluent type A or type B					90% at 59 °F (15 °C)		
* * * * *								

42. In § 173.226, paragraph (c) is revised to read as follows:

§ 173.226 Materials poisonous by inhalation, Division 6.1, Packing Group I, Hazard

Zone A.

* * * * *

(c) In combination packagings, consisting of an inner packaging system and an outer packaging, as follows:

(1) Outer packagings:

Steel drum: 1A2

Aluminum drum: 1B2

Metal drum, other than steel or aluminum: 1N2

Plywood drum: 1D

Fiber drum: 1G

Plastic drum: 1H2

Steel box: 4A

Aluminum box: 4B

Natural wood box: 4C1 or 4C2

Plywood box: 4D

Reconstituted wood box: 4F

Fiberboard box: 4G

Expanded plastic box: 4H2

Solid plastic box: 4H2

(2) Inner packaging system. The inner packaging system consists of two

packagings:

(i) an impact-resistant receptacle of glass, earthenware, plastic or metal securely cushioned with a non-reactive, absorbent material, and

(A) Capacity of each inner receptacle may not exceed 4 L (1 gallon).

(B) An inner receptacle that has a closure must have a closure which is physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transportation.

(ii) Packed within a leak-tight packaging of metal or plastic.

(iii) This combination packaging in turn is packed within the outer packaging.

(3) Additional requirements:

(i) The total amount of liquid contained in the outer packaging must not exceed 16 L (4 gallons).

(ii) The inner packaging system must conform to the performance test requirements of subpart M of part 178 of this subchapter, at the Packaging Group I performance level when subjected to the following tests:

(A) §178.603—Drop Test

(B) §178.604—Leakproofness Test

(C) §178.605—Hydrostatic Pressure Test

(iii) The inner packaging system must meet the above tests without the benefit of the outer packaging.

(iv) The leakproofness and hydrostatic pressure test may be conducted on either the inner receptacle or the outer packaging of the inner packaging system.

(v) The outer package must conform to the performance test requirements of

subpart M of part 178 of this subchapter, at the Packaging Group I performance level as applicable for the type of package being used.

* * * * *

43. Section 173.230 is revised to read as follow:

§ 173.230 Fuel cell cartridges containing hazardous material.

(a) Requirements for Fuel Cell Cartridges. Fuel cell cartridges, including when contained in or packed with equipment, must be designed and constructed to prevent fuel leakage under normal conditions of transportation. Fuel cell cartridge design types using liquids as fuels must pass an internal pressure test at a gauge pressure of 100 kPa (15 psig) without leakage. Except for fuel cell cartridges containing hydrogen in metal hydride which must be in conformance with paragraph (d) of this section, each fuel cell cartridge design type including when contained in or packed with equipment, must pass a 1.2 meter (3.9 feet) drop test onto an unyielding surface in the orientation most likely to result in the failure of the containment system with no loss of contents. Fuel cell cartridges installed in or integral to a fuel cell system are regarded as contained in equipment. Fuel cell cartridges containing a Division 2.1, Division 4.3 or Class 8 material must meet the following additional requirements.

(b) A fuel cell cartridge designed to contain a Division 4.3 or a Class 8 material may contain an activator provided it is fitted with two independent means of preventing unintended mixing with the fuel during transport.

(c) Each fuel cell cartridge designed to contain a liquefied flammable gas must:

(1) Be capable of withstanding, without leakage or bursting, a pressure of at least two times the equilibrium pressure of the contents at 55°C (131°F);

(2) Contain no more than 200 mL of liquefied flammable gas with a vapor pressure not exceeding 1,000 kPa (150 psig) at 55°C (131°F); and

(3) Pass the hot water bath test prescribed in accordance with § 173.306(a)(3)(v).

(d) Each fuel cell cartridge designed to contain hydrogen in a metal hydride must conform to the following:

(1) Each fuel cell cartridge must have a water capacity less than or equal to 120 mL (4 fluid ounces).

(2) Each fuel cell cartridge must be a design type that has been subjected, without leakage or bursting, a pressure of at least two times the design pressure of the cartridge at 55 °C (131 °F) or 200 kPa (30 psig) more than the design pressure of the cartridge at 55 °C (131 °F), whichever is greater. The pressure at which the test is conducted is referred to as the “minimum shell burst pressure.” The pressure within the fuel cell cartridge must not exceed 5 MPa (725 psig) at 55 °C (131 °F).

(3) Each fuel cell cartridge must be filled in accordance with the procedure provided by the manufacturer. The manufacturer must provide the following information with each fuel cell cartridge:

(i) Inspection procedures to be carried out before initial filling and before refilling of the fuel cell cartridge;

(ii) Safety precautions and potential hazards to be aware of;

(iii) A method of determining when the rated capacity has been achieved;

(iv) Minimum and maximum pressure range;

(v) Minimum and maximum temperature range; and

(vi) Any other requirements to be met for initial filling and refilling including the type of equipment to be used.

(4) Each fuel cell cartridge must be permanently marked with the following information:

(i) The rated charging pressure in megapascals (MPa);

(ii) The manufacturer's serial number of the fuel cell cartridges or unique identification number; and

(iii) The expiration date based on the maximum service life (yyyy/mm).

(5) Design type tests: Each fuel cell cartridge design type must be subjected to and pass the following tests (this includes cartridges integral to a fuel cell):

(i) Drop test. A 1.8 m (5.9 feet) drop test onto an unyielding surface must be performed. There must be no leakage. Leakage must be determined using a soap bubble

solution or other equivalent means on all possible leak locations, when the fuel cell cartridge is charged to its rated charging pressure. The fuel cell cartridge must then be hydrostatically pressurized to destruction. The burst pressure must be greater than 85% of the minimum shell burst pressure. The drop must be performed in the following four different orientations:

- (A) Vertically, on the end containing the shut-off valve assembly;
 - (B) Vertically, on the end opposite to the shut-off valve assembly;
 - (C) Horizontally, onto a steel apex with a diameter of 3.8 cm (9.7 in), with the steel apex in the upward position; and
 - (D) At a 45° angle on the end containing the shut-off valve assembly.
- (ii) Fire test. A fuel cell cartridge filled to rated capacity (with hydrogen) must be subjected to a fire engulfment test. The cartridge design (including design types with an integral vent feature) is deemed to pass the fire test if:
- (A) The internal pressure vents to zero gauge pressure without the rupture of the cartridge; or
 - (B) The cartridge withstands the fire for a minimum of 20 minutes without rupture.
- (iii) Hydrogen cycling test. A fuel cell cartridge must be subjected to a hydrogen cycling test to ensure that the design stress limits are not exceeded during use. The fuel

cell cartridge must be cycled from not more than 5% rated hydrogen capacity to not less than 95% rated hydrogen capacity and back to not more than 5% rated hydrogen capacity. The rated charging pressure must be used for charging and temperatures must be within the operating temperature range. The cycling must be continued for at least 100 cycles. Following the cycling test the fuel cell cartridge must be charged and the water volume displaced by the cartridge must be measured. The cartridge design is deemed to pass the test if the water volume displaced by the cycled cartridge does not exceed the water volume displaced by an uncycled cartridge charged to 95% rated capacity and pressurized to 75% of its minimum shell burst pressure.

(6) Production leak test. Each fuel cell cartridge must be tested for leaks at $15\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ ($59\text{ }^{\circ}\text{F} \pm 9\text{ }^{\circ}\text{F}$) while pressurized to its rated charging pressure. There must be no leakage. Leakage must be determined using a soap bubble solution or other equivalent means on all possible leak locations.

(e) The following packagings are authorized provided the general packaging requirements subpart B of part 173 of this subchapter are met:

(1) For fuel cell cartridges, rigid packagings conforming to the requirements of part 178 of this subchapter at the packing group II performance level; and

(2) Strong outer packagings for fuel cell cartridges contained in equipment or packed with equipment. Large equipment containing fuel cell cartridges may be transported unpackaged if the equipment provides an equivalent level of protection.

(i) Fuel cell cartridges packed with equipment must be packed in intermediate

packagings together with the equipment they are capable of powering. The fuel cell cartridges and the equipment must be packaged with cushioning material or dividers or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the shifting or placement of the equipment and the cartridges within the outer packaging; and

(ii) Fuel cell cartridges installed in equipment must be protected against short circuits and the entire system must be protected from unintentional activation.

(f) For transportation by aircraft, the following additional provisions apply:

(1) The package must comply with the applicable provisions of § 173.27 of this subchapter;

(2) For fuel cells contained in equipment, fuel cell systems must not charge batteries during transport;

(3) For transportation aboard passenger aircraft, when contained in equipment, each fuel cell system and fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 (IBR, see §171.7 of this subchapter) or a standard approved by the Associate Administrator;

(4) For fuel cell cartridges packed with equipment, the maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus 2 spares;

(5) Large robust articles containing fuel cells may be transported unpackaged

when approved by the Associate Administrator; and

(6) The mass of a fuel cell cartridge containing a Division 4.3 or Class 8 materials must be not more than 1 kg (2.2 lbs).

(7) Fuel cell cartridges intended for transportation in carry-on baggage on board passenger aircraft must comply with paragraphs (a), (b), (c), (d) in this section and the applicable provisions prescribed in § 175.10 of this subchapter.

(g) Limited quantities. Limited quantities of hazardous materials contained in fuel cell cartridges are excepted from the labeling, placarding and the specification packaging requirements of this subchapter when packaged according to this section. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. Limited quantities of fuel cell cartridges are not permitted for transportation by aircraft. For transportation by highway, rail and vessel, the following combination packagings are authorized:

(1) For flammable liquids, in fuel cell cartridges containing not more than 1.0 L (0.3 gallon), packed in strong outer packaging.

(2) For water-reactive substances (Division 4.3 Dangerous when wet material), in fuel cell cartridges containing not more than 0.5 L (16.9 fluid ounces) for liquids or not over 0.5 kg (1.1 pound) for solids, packed in strong outer packaging.

(3) For corrosive materials, in fuel cell cartridges containing not more than 1.0 L (0.3 gallon) for liquids or not more than 1.0 kg (2.2 pounds) for solids packed in strong

outer packaging.

(4) For liquefied (compressed) flammable gas, in fuel cell cartridges not over 120 mL (4 fluid ounces) net capacity each, packed in strong outer packaging.

(5) For hydrogen in metal hydride, in fuel cell cartridges not over 120 mL (4 fluid ounces) net capacity each, packed in strong outer packaging.

(h) Consumer commodities. A limited quantity which conforms to the provisions of paragraph (g) of this section and is a “consumer commodity” as defined in § 171.8 of this subchapter may be renamed “Consumer commodity” and reclassified as ORM-D. In addition to the exceptions provided in paragraph (g) of this section, shipments of ORM-D materials are not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, and are eligible for the exceptions provided in § 173.156.

44. Section 173.304b is revised to read as follows:

§ 173.304b Additional requirements for shipment of liquefied compressed gases in UN pressure receptacles.

(a) General. Liquefied gases and gas mixtures must be offered for transportation in UN pressure receptacles subject to the requirements in this section and §173.304. In addition, the general requirements applicable to UN pressure receptacles in §§173.301

and 173.301b must be met.

(b) UN pressure receptacle filling limits. A UN pressure receptacle is authorized for the transportation of liquefied compressed gases and gas mixtures as specified in this section. When a liquefied compressed gas or gas mixture is transported in a UN pressure receptacle, the filling ratio may not exceed the maximum filling ratio prescribed in this section and the applicable ISO standard. Compliance with the filling limits may be determined by referencing the numerical values and data in Table 2 of P200 of the UN Recommendations (IBR, see §171.7 of this subchapter). Alternatively, the maximum allowable filling limits may be determined as follows:

(1) For high pressure liquefied gases, in no case may the filling ratio of the settled pressure at 65 °C (149 °F) exceed the test pressure of the UN pressure receptacle.

(2) For low pressure liquefied gases, the filling factor (maximum mass of contents per liter of water capacity) must be less than or equal to 95 percent of the liquid phase at 50 °C. In addition, the UN pressure receptacle may not be liquid full at 60 °C. The test pressure of the pressure receptacle must be equal to or greater than the vapor pressure of the liquid at 65 °C.

(3) For high pressure liquefied gases or gas mixtures, the maximum filling ratio may be determined using the formulas in (3)(b) of P200 of the UN Recommendations.

(4) For low pressure liquefied gases or gas mixtures, the maximum filling ratio may be determined using the formulas in (3)(c) of P200 of the UN Recommendations.

(c) Tetraflouroethylene, stabilized, UN1081 must be packaged in a pressure receptacle with a minimum test pressure of 200 bar and a working pressure not exceeding 5 bar.

(d) Fertilizer ammoniating solution with free ammonia, UN1043 is not authorized in UN tubes or MEGCs.

45. In § 173.306, new paragraph (a)(5) is added; and paragraphs (b)(1), (b)(2), (b)(3), (i), and (j) are revised to read as follows:

§ 173.306 Limited quantities of compressed gases.

(a) * * *

(5) For limited quantities of Division 2.2 gases with no subsidiary risk, when in a plastic container for the sole purpose of expelling a liquid, paste or powder, provided all of the following conditions are met. Special exceptions for shipment of aerosols in the ORM-D class are provided in paragraph (i) of this section.

(i) Capacity must not exceed 1 L (61.0 cubic inches).

(ii) Pressure in the container must not exceed 160 psig at 130 °F. If the pressure in the container is less than 140 psig at 130°F, a non-DOT specification container may be used. If the pressure in the container exceeds 140 psig at 130°F but does not exceed 160 psig at 130°F, the container must conform to specification DOT 2S. All non-DOT specification and specification DOT 2S containers must be capable of withstanding, without bursting, a pressure of one and one-half times the equilibrium pressure of the

contents at 130 °F.

(iii) Liquid content of the material and gas must not completely fill the container at 130 °F.

(iv) The container must be packed in strong outside packagings.

(v) Each container must be subjected to a test performed in a hot water bath; the temperature of the bath and the duration of the test must be such that the internal pressure reaches that which would be reached at 55 °C (131 °F) or 50 °C (122 °F) if the liquid phase does not exceed 95% of the capacity of the container at 50 °C (122 °F). If the contents are sensitive to heat, the temperature of the bath must be set at between 20 °C (68 °F) and 30 °C (86 °F) but, in addition, one container in 2,000 must be tested at the higher temperature. No leakage or permanent deformation of a container may occur.

(vi) Each outside packaging must be marked “INSIDE CONTAINERS COMPLY WITH PRESCRIBED REGULATIONS.”

* * * * *

(b) * * *

(1) Foodstuffs or soaps in a nonrefillable metal or plastic container not exceeding 1 L (61.0 cubic inches), with soluble or emulsified compressed gas, provided the pressure in the container does not exceed 140 psig at 130 °F. Plastic containers must only contain Division 2.2 non-flammable soluble or emulsified compressed gas. The metal or plastic container must be capable of withstanding, without bursting, a pressure of one and one-half times the equilibrium pressure of the contents at 130 °F.

(i) Containers must be packed in strong outside packagings.

(ii) Liquid content of the material and the gas must not completely fill the

container at 130 °F.

(iii) Each outside packaging must be marked “INSIDE CONTAINERS COMPLY WITH PRESCRIBED REGULATIONS.”

(2) Cream in refillable metal or plastic containers with soluble or emulsified compressed gas. Plastic containers must only contain Division 2.2 non-flammable soluble or emulsified compressed gas. Containers must be of such design that they will hold pressure without permanent deformation up to 375 psig and must be equipped with a device designed so as to release pressure without bursting of the container or dangerous projection of its parts at higher pressures. This exception applies to shipments offered for transportation by refrigerated motor vehicles only.

(3) Nonrefillable metal or plastic containers charged with a Division 6.1 Packing Group III or nonflammable solution containing biological products or a medical preparation which could be deteriorated by heat, and compressed gas or gases. Plastic containers must only contain 2.2 non-flammable soluble or emulsified compressed gas. The capacity of each container may not exceed 35 cubic inches (19.3 fluid ounces). The pressure in the container may not exceed 140 psig at 130 °F, and the liquid content of the product and gas must not completely fill the containers at 130 °F. One completed container out of each lot of 500 or less, filled for shipment, must be heated, until the pressure in the container is equivalent to equilibrium pressure of the contents at 130 °F. There must be no evidence of leakage, distortion, or other defect. The container must be packed in strong outside packagings.

* * * * *

(i) Consumer commodities. A limited quantity which conforms to the provisions

of paragraph (a)(1), (a)(3), (a)(5), or (b) of this section and is a “consumer commodity” as defined in § 171.8 of this subchapter, may be renamed “consumer commodity” and reclassified as ORM-D material. Each package may not exceed 30 kg (66 pounds) gross weight. In addition to the exceptions provided by paragraphs (a) and (b) of this section—

(1) Outside packagings are not required to be marked “INSIDE CONTAINERS COMPLY WITH PRESCRIBED REGULATIONS”;

(2) Shipments of ORM-D materials are not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, a hazardous waste, or a marine pollutant or unless offered for transportation or transported by aircraft; and

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

(j) Aerosols and receptacles small, containing gas with a capacity of less than 50 mL. Aerosols, as defined in § 171.8 of this subchapter, and receptacles small, containing gas, with a capacity not exceeding 50 mL (1.7 oz.) and with a pressure not exceeding 970 kPa (141 psig) at 55 °C (131 °F), containing no hazardous materials other than a Division 2.2 gas, are not subject to the requirements of this subchapter. The pressure limit may be increased to 2000 kPa (290 psig) at 55 °C (131 °F) provided the aerosols are transported in outer packages that conform to the packaging requirements of Subpart B of this part. This paragraph (j) does not apply to a self-defense spray (e.g., pepper spray).

46. In § 173.307, new paragraph (a)(5) is added to read as follows:

§ 173.307 Exceptions for compressed gases.

(a) * * *

(5) Manufactured articles or apparatuses, each containing not more than 100 mg (0.0035 ounce) of inert gas and packaged so that the quantity of inert gas per package does not exceed 1 g (0.35 ounce).

* * * * *

47. In § 173.322, paragraph (d) is revised to read as follows:

§ 173.322 Ethyl chloride.

* * * * *

(d) In specification cylinders as prescribed for any compressed gas except acetylene. Cylinders made of aluminum alloy are not authorized.

PART 175—CARRIAGE BY AIRCRAFT

48. The authority citation for part 175 continues to read as follows:

Authority: 49 U.S.C. 5101-5128; 44701; 49 CFR 1.45 and 1.53.

49. In § 175.10, paragraphs (a)(10), (a)(15), (a)(17), and (a)(18) are revised and a new paragraph (c) is added to read as follows:

§ 175.10 Exceptions for passengers, crewmembers, and air operators.

(a) This subchapter does not apply to the following hazardous materials when carried by aircraft passengers or crewmembers provided the requirements of §§ 171.15 and 171.16 (see paragraph (c) of this section) and the requirements of this section are met:

* * * * *

(10) Dry ice (carbon dioxide, solid), with the approval of the operator:

(i) Quantities may not exceed 2.5 kg (5.5 pounds) per person when used to pack perishables not subject to the HMR. The package must permit the release of carbon dioxide gas; and

(ii) When carried in checked baggage, each package is marked “DRY ICE” or “CARBON DIOXIDE, SOLID,” and marked with the net weight of dry ice or an indication the net weight is 2.5 kg (5.5 pounds) or less.

* * * * *

(15) * * *

(i) The battery meets the requirements of § 173.159a(d) of this subchapter for non-spillable batteries;

(ii) Visual inspection including removal of the battery, where necessary, reveals no obvious defects (removal of the battery from the housing should be performed by qualified airline personnel only);

(iii) The battery is disconnected and the battery terminals are protected to prevent short circuits, unless the wheelchair or mobility aid design provides an effective means of preventing unintentional activation, and

(iv) The battery is—

(A) Securely attached to the wheelchair or mobility aid;

(B) Is removed and placed in a strong, rigid packaging marked “NONSPILLABLE BATTERY” (unless fully enclosed in a rigid housing that is properly marked), or

(C) Is handled in accordance with paragraph (a)(16)(iv) of this section.

* * * * *

(17) Except as provided in §173.21 of this subchapter, portable electronic devices (for example, watches, calculating machines, cameras, cellular phones, lap-top and notebook computers, camcorders, etc.) containing cells or batteries (including lithium cells or batteries) and spare batteries and cells for these devices, when carried by passengers or crew members for personal use. Each spare battery must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g., by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch) and carried in carry-on baggage only. In addition, each installed or spare battery must not exceed the following:

(i) For batteries other than lithium, a voltage (electric potential) greater than 9 volts;

(ii) For a lithium metal battery, a lithium content of not more than 2 grams per battery; or

(iii) For a lithium-ion battery, an aggregate equivalent lithium content of not more than 8 grams per battery, except that up to two batteries with an aggregate equivalent lithium content of more than 8 grams but not more than 25 grams may be carried.

(18) Portable electronic devices (for example, cameras, cellular phones, laptop computers, and camcorders) powered by fuel cell systems, and not more than two spare

fuel cell cartridges per passenger or crew member, when transported in carry-on baggage for personal use under the following conditions:

(i) Fuel cell cartridges may contain only Division 2.1 liquefied flammable gas, or hydrogen in a metal hydride, Class 3 flammable liquids (including methanol), Division 4.3 water reactive substances, or Class 8 corrosive materials;

(ii) The maximum quantity of fuel in any fuel cell cartridge may not exceed:

(A) 200 mL (6.76 ounces) for liquids,

(B) 120 mL (4 fluid ounces) for liquefied gases in non-metallic fuel cell cartridges, or 200 mL (6.76 ounces) for liquefied gases in metal fuel cell cartridges;

(C) 200 g (7 ounces) for solids; or

(D) 120 mL (4 fluid ounces) for hydrogen in a metal hydride.

(iii) No more than two spare fuel cell cartridges may be carried by a passenger;

(iv) Fuel cell systems containing fuel and fuel cell cartridges including spare cartridges are permitted in carry-on baggage only;

(v) Fuel cell cartridges containing hydrogen in a metal hydride must meet the requirements in § 173.230(d);

(vi) Fuel cell cartridges may not be refillable by the user. Refueling of fuel cell systems is not permitted except that the installation of a spare cartridge is allowed. Fuel cell cartridges that are used to refill fuel cell systems but that are not designed or intended to remain installed (fuel cell refills) in a portable electronic device are not permitted;

(vii) Fuel cell systems and fuel cell cartridges must conform to IEC/PAS 62282-6-1 (IBR; see § 171.7 of this subchapter);

(viii) Interaction between fuel cells and integrated batteries in a device must

conform to IEC/PAS 62282-6-1 (IBR, see §171.7 of this subchapter). Fuel cell systems for which the sole function is to charge a battery in the device are not permitted;

(ix) Fuel cell systems must be of a type that will not charge batteries when the consumer electronic device is not in use; and

(x) Each fuel cell cartridge and system that conforms to the requirements in this paragraph (a)(18) must be durably marked by the manufacturer with the wording:

“APPROVED FOR CARRIAGE IN AIRCRAFT CABIN ONLY” to certify that the fuel cell cartridge or system meets the specifications in IEC/PAS 62282-6-1 (IBR, see §171.7 of this subchapter) and with the maximum quantity and type of fuel contained in the cartridge or system.

* * * * *

(c) The requirements to submit incident reports as required under §§ 171.15 and 171.16 of this subchapter apply to the air carrier.

50. In § 175.33, paragraphs (a)(1)(i) and (c)(4) are revised and a new paragraph (a)(11) is added to read as follows:

§ 175.33 Shipping paper and notification of pilot-in-command.

* * * * *

(a) * * *

(1) * * *

(i) Section 172.101 of this subchapter. Except for the requirement to indicate the

type of package, any additional description requirements provided in §§ 172.202, and 172.203 of this subchapter must also be shown on the notification.

* * * * *

(11) For UN1845, Carbon dioxide, solid (dry ice), only the UN number, proper shipping name, hazard class, total quantity in each hold aboard the aircraft, and the airport at which the package(s) is to be unloaded must be provided.

* * * * *

(c) * * *

(4) Make available, upon request, to an authorized official of a Federal, State, or local government agency (including an emergency responder(s)) at reasonable times and locations, the documents or information required to be retained by this paragraph. In the event of a reportable incident, as defined in § 171.15 of this subchapter, make immediately available to an authorized official of a Federal, State, or local government agency (including an emergency responders), the documents or information required to be retained by this paragraph.

* * * * *

51. In § 175.75, paragraph (d) is revised and paragraph (e)(5) is redesignated to paragraph (f) to read as follows:

§ 175.75 Quantity limitations and cargo location.

* * * * *

(d) Each package displaying a “Cargo Aircraft Only” label must be loaded on

cargo aircraft as follows:

(1) In a manner that a crew member or other authorized person can access, handle and when size and weight permit, separate such packages from other cargo during flight;

(2) In a cargo compartment certified by FAA as a Class C aircraft cargo compartment as defined in 14 CFR 25.857(c); or

(3) In an FAA-certified freight container that has an approved fire or smoke detection system and fire suppression system equivalent to that required by the certification requirements for a Class C aircraft cargo compartment.

(e) For cargo aircraft only, the requirements of paragraph (c) and (d) do not apply to the following hazardous materials:

(1) Class 3—Packing Group III (that do not meet the definition of another hazard class), Division 6.1 (except those also labeled FLAMMABLE), Division 6.2, Class 7, Class 9 or ORM—D.

(2) Division 2.2 in that an additional 75 kg (165 pounds) net weight of Division 2.2 material is authorized in inaccessible locations.

(3) Packages of hazardous materials transported aboard a cargo aircraft, when other means of transportation are impracticable or not available, in accordance with procedures approved in writing by the FAA Regional or Field Security Office in the region where the operator is located.

(4) Packages of hazardous materials carried on small, single pilot, cargo aircraft if:

(i) No person is carried on the aircraft other than the pilot, an FAA inspector, the

shipper or consignee of the material, a representative of the shipper or consignee so designated in writing, or a person necessary for handling the material;

(ii) The pilot is provided with written instructions on the characteristics and proper handling of the materials; and

(iii) Whenever a change of pilots occurs while the material is on board, the new pilot is briefed under a hand-to-hand signature service provided by the operator of the aircraft.

(f) At a minimum, quantity limits and loading instructions in the following quantity and loading tables must be followed to maintain acceptable quantity and loading between packages containing hazardous materials. These requirements do not apply to Class 9 or ORM-D materials. For cargo aircraft only packages containing hazardous materials, packages loaded in conformance with paragraph (d) of this section are considered accessible for the purposes of the Cargo Only Aircraft table. The quantity and loading tables are as follows:

* * * * *

52. In § 175.88, paragraph (c) is revised to read as follows:

§ 175.88 Inspection, orientation and securing packages of hazardous materials.

* * * * *

(c) Packages containing hazardous materials must be secured in an aircraft in a manner that will prevent any shifting or any change in the orientation of the packages.

Packages containing Class 7 (radioactive) materials must be secured in a manner that ensures that the separation requirements of §§ 175.701 and 175.702 will be maintained at all times during flight.

53. In § 175.700, paragraph (a) is revised to read as follows:

§ 175.700 Special limitations and requirements for Class 7 materials.

(a) Except as provided in §§ 173.4a, 173.422 and 173.423 of this subchapter, no person may carry any Class 7 materials aboard a passenger-carrying aircraft unless that material is intended for use in, or incident to research (See §171.8 of this subchapter), medical diagnosis or treatment. Regardless of its intended use, no person may carry a Type B(M) package aboard a passenger-carrying aircraft, a vented Type B(M) package aboard any aircraft, or a liquid pyrophoric Class 7 material aboard any aircraft.

* * * * *

PART 176—CARRIAGE BY VESSEL

54. The authority citation for part 176 continues to read as follows:

Authority: 49 U.S.C. 5101-5128; 49 CFR 1.53.

55. In § 176.2, the definition for “Commandant” is revised to read as follows:

§ 176.2 Definitions.

* * * * *

Commandant (CG-522), USCG means the Chief, Office of Operating and Environmental Standards, United States Coast Guard, Washington, DC 20593-0001.

* * * * *

56. In § 176.3, paragraph (a) is revised to read as follows:

§ 176.3 Unacceptable hazardous materials shipments.

(a) A carrier may not transport by vessel any shipment of a hazardous material that is not prepared for transportation in accordance with parts 172 and 173 of this subchapter, or as authorized by subpart C of part 171 of this subchapter.

* * * * *

57. In § 176.84, in paragraph (b), in the Table of provisions, Code “134”, Code “139” and Code “140” are removed; and new Codes “145” and “146” are added in the appropriate numerical order to read as follows:

* * * * *

(b) * * *

Code	Provisions
------	------------

* * * * *

145 Stow “separated from” ammonium
compounds except for UN1444.

146 Category B stowage applies for unit loads in
open cargo transport units.

* * * * *

58. In § 176.172, paragraph (a) introductory text is revised to read as follows:

§ 176.172 Structural serviceability of freight containers and vehicles carrying Class 1
(explosive) materials on ships.

(a) Except for Division 1.4 materials, a freight container may not be offered for the carriage of Class 1 (explosive) materials, unless the container is structurally serviceable as evidenced by a current CSC (International Convention for Safe Containers) approval plate and verified by a detailed visual examination as follows:

* * * * *

PART 178--SPECIFICATIONS FOR PACKAGINGS

59. The authority citation for part 178 continues to read as follows:

Authority: 49 U.S.C. 5101-5128; 49 CFR 1.53.

60. In Subpart B of Part 178, new §§ 178.33b through 178.33b-9 are added to read as follows:

§ 178.33b Specification 2S; inner nonrefillable plastic receptacles.

§ 178.33b-1 Compliance.

- (a) Required in all details.
- (b) [Reserved]

§ 178.33b-2 Type and size.

- (a) Single-trip inside containers.
- (b) The maximum capacity of containers in this class shall not exceed one liter (61.0 cubic inches). The maximum inside diameter shall not exceed 3 inches.

§ 178.33b-3 Inspection.

- (a) By competent inspector.
- (b) [Reserved]

§ 178.33b-4 Duties of inspector.

- (a) To inspect material and completed containers and witness tests, and to reject defective materials or containers.
- (b) [Reserved]

§ 178.33b-5 Material.

- (a) The receptacles must be constructed of polyethylene terephthalate (PET), polyethylene naphthalate (PEN), polyamide (Nylon) or a blend of PET, PEN, ethyl vinyl

alcohol (EVOH) and/or Nylon.

(b) Material with seams, cracks, laminations or other injurious defects are forbidden.

§ 178.33b-6 Manufacture.

(a) Each container must be manufactured by thermoplastic processes that will assure uniformity of the completed container. No used material other than production residues or regrind from the same manufacturing process may be used. The packaging must be adequately resistant to aging and to degradation caused either by the substance contained or by ultraviolet radiation.

(b) [Reserved]

§ 178.33b-7 Design Qualification Test.

(a) Drop Testing.

(1) To ensure that creep does not affect the ability of the container type to retain the contents, each container type shall be drop tested as follows: three groups of twenty-five filled containers shall be dropped from 1.8m on to a rigid, non-resilient, flat and horizontal surface. One group must be conditioned at 38 °C (100 °F) for 26 weeks, the second group for 100 hours at 50 °C (122 °F) and the third group for 18 hours at 55 °C (131 °F), prior to performing the drop test.

(2) Criteria for passing the drop test: the containers must not break or leak.

(b) [Reserved]

§ 178.33b-8 Production Tests.

(a) Burst Testing.

(1) One out of each lot of 5,000 containers or less, successively produced per day must be pressure tested to destruction and must not burst below 240 psig. The container tested must be complete as intended for transportation.

(2) Each such 5,000 containers or less, successively produced per day, shall constitute a lot and if the test container shall fail, the lot shall be rejected or ten additional containers may be selected at random and subjected to the test under which failure occurred. These containers shall be complete as intended for transportation. Should any of the ten containers thus tested fail, the entire lot must be rejected. All containers constituting a lot shall be of like material, size, design construction, finish, and quality.

(b) Leak Testing.

(1) Each empty container must be subjected to a pressure equal to or in excess of the maximum expected in the filled containers at 55 °C (131 °F) or 50 °C (122 °F) if the liquid phase does not exceed 95 percent of the capacity of the container at 50 °C (122 °F). This must be at least two-thirds of the design pressure of the aerosol dispenser. If any container shows evidence of leakage at a rate equal to or greater than $3.3 \times 10^{-2} \text{mbar.l.s}^{-1}$ at 20 °C (68 °F), at the test pressure, distortion or other defect, it must be rejected.

(2) Prior to filling, the filler must ensure that the crimping equipment is set appropriately and the specified propellant is used. Once filled, each container must be weighed and leak tested. The leak detection equipment must be sufficiently sensitive to detect at least a leak rate of $2.0 \times 10^{-3} \text{mbar.l.s}^{-1}$ at 20 °C (68 °F). Any filled container

which shows evidence of leakage, deformation, or excessive weight must be rejected.

§ 178.33b-9 Marking.

(a) Each container must be clearly and permanently marked to show:

(1) DOT-2S.

(2) Name or symbol of person making the mark specified in paragraph (a)(1) of this section. Symbol, if used, must be registered with the Associate Administrator.

(b) [Reserved]

61. In § 178.502, paragraph (d) is revised and a note to the section is added to read as follows:

§ 178.502 Identification codes for packagings.

* * * * *

(d) Identification codes are set forth in the standards for packagings in §§ 178.504 through 178.523 of this subpart.

NOTE to § 178.502: Plastics materials include other polymeric materials such as rubber.

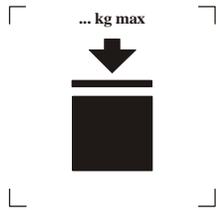
62. In § 178.703, paragraph (a)(1)(vii) is revised to read as follows:

§ 178.703 Marking of IBCs.

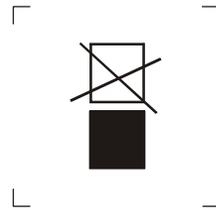
(a) * * *

(1) * * *

(vii)(A) The stacking test load in kilograms (kg). For IBCs not designed for stacking, the figure “0” and the symbol for IBCs not capable of being stacked must be displayed. For IBCs designed for stacking, the maximum permitted stacking load applicable when the IBC is in use must be included with the symbol for IBCs capable of being stacked. All IBCs manufactured, repaired or remanufactured after January 1, 2011 must be display the applicable symbol as follows:



IBCs capable of being stacked



IBCs NOT capable of being stacked

(B) The symbol shall be not less than 100 mm (3.9 inches) x 100 mm (3.9 inches), be durable and clearly visible. The letters and numbers shall be at least 12 mm high (.48 inches). The mass marked above the symbol shall not exceed the load imposed during the design test divided by 1.8.

* * * * *

63. In § 178.801, paragraph (f)(1)(i) is revised to read as follows:

§ 178.801 General requirements.

* * * * *

(f) * * *

(1) * * *

(i) The IBC need not have its closures fitted, except that the IBC must be fitted with its primary bottom closure.

* * * * *

64. In § 178.810, paragraph (e) is revised to read as follows:

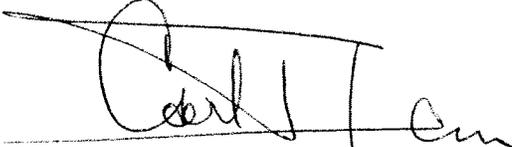
§ 178.810 Drop test.

* * * * *

(e) Criteria for passing the test. For all IBC design types, there may be no damage which renders the IBC unsafe to be transported for salvage or for disposable, and no loss of contents. The IBC shall be capable of being lifted by an appropriate means until clear of the floor for five minutes. A slight discharge from a closure upon impact is not considered to be a failure of the IBC provided that no further leakage occurs. A slight discharge (e.g., from closures or stitch holes) upon impact is not considered a failure of the flexible IBC provided that no further leakage occurs after the IBC has been raised clear of the ground.

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Pipeline and Hazardous Materials Safety Administration