

DEPARTMENT OF TRANSPORTATION**Pipeline and Hazardous Materials Safety Administration****49 CFR Parts 172 and 175**

[Docket No. PHMSA–2015–0100 (HM–259)]

RIN 2137–AF10

Hazardous Materials: Notification of the Pilot-in-Command and Response to Air Related Petitions for Rulemaking

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

ACTION: Final rule.

SUMMARY: PHMSA, in consultation with the Federal Aviation Administration, issues this final rule to align the U.S. Hazardous Materials Regulations with current international standards for the air transportation of hazardous materials. These amendments revise certain special provisions, packaging requirements, information to the pilot-in-command requirements, and exceptions for passengers and crewmembers. In addition to facilitating harmonization with international standards, several of the amendments in this rule are responsive to petitions for rulemaking submitted by the regulated community.

DATES:

Effective date: This rule is effective October 18, 2018.

Delayed compliance date: Unless otherwise specified, compliance with the amendments adopted in this final rule is required beginning October 18, 2019.

FOR FURTHER INFORMATION CONTACT:

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I. Background

On December 5, 2016, PHMSA (also “we”), in consultation with the Federal Aviation Administration (FAA), published a notice of proposed rulemaking (NPRM) [Docket No. PHMSA–2015–0100 (HM–259); 81 FR 87510] to amend the Hazardous Materials Regulations (HMR; 49 CFR parts 171–180) to align more closely with certain provisions of the International Civil Aviation Organization’s Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Technical Instructions). These amendments update miscellaneous regulatory requirements for hazardous materials offered for transportation, or transported, in commerce by aircraft. In addition, the NPRM proposed amendments in response to four petitions for rulemaking submitted by the regulated community. The petitions are included in the docket for this proceeding and are discussed at length in Section II (Comment Discussion) of this rulemaking. In the NPRM, the phrase “notification to the pilot-in-command” and the acronym “NOTOC” were used. In this final rule, consistent with the ICAO Technical Instructions, the phrase “information to the pilot-in-command” is used.

II. Comment Discussion

In response to the NPRM [81 FR 87510], PHMSA received comments from the following organizations:

- Air Line Pilots Association (ALPA)
- Airlines for America (A4A)
- Council on Safe Transportation of Hazardous Articles (COSTHA)
- Dangerous Goods Advisory Council (DGAC)
- United Parcel Service (UPS)

See below for discussion of the comments received and PHMSA’s determined action in this final rule. This section addresses comments made to proposals to revise the HMR based on petitions for rulemaking. Additional comments are addressed in Section III (Section-by-Section Review) of this rulemaking.

A. Transportation by Air Intermediate Packaging Requirements for Certain Low and Medium Danger Hazardous Materials (P–1637)

The DGAC petitioned PHMSA to remove the additional intermediate packaging requirements found in special provisions A3 and A6, *see* 49 CFR 172.102(b)(2), by deleting these special provisions and all references to them in the Hazardous Materials Table (HMT) in § 172.101. *See* P–1637.¹ Special provisions A3 and A6 apply to certain commodities as assigned in column (7) of the HMT when transported by aircraft:

- Special provision A3 states that if glass inner packagings are used for transportation of referenced commodities, they must be packed with absorbent material in tightly closed metal receptacles before being packed in outer packagings.
- Special provision A6 states that if plastic inner packagings are used for transportation of referenced commodities, they must be packed in tightly closed metal receptacles before being packed in outer packagings.

The petitioner notes that the packaging requirements imposed by special provisions A3 and A6 are domestic provisions not found in the ICAO Technical Instructions and that maintaining these differences creates both a trade barrier to U.S. exports and a burden to the domestic market. The petitioner contends that the requirement for “metal receptacles” is overly restrictive and provides a competitive advantage to shippers in countries that allow these products to be shipped without additional intermediate packagings.

The petitioner further notes that the following requirements in § 173.27(d) and (e) of the HMR make special provisions A3 and A6 unnecessary: (1) When transported by air, inner packagings of Packing Group (PG) I materials currently assigned A3, A6, or both are already required to be packed in either a rigid and leakproof receptacle or an intermediate packaging containing sufficient absorbent material to absorb the entire contents of the inner

¹ See <https://www.regulations.gov/docket?D=PHMSA-2014-0094>.

packaging before packing the inner packaging in its outer package; and (2) PG II and III commodities are already subject to secondary closure requirements. Therefore, the petitioner asks that the intermediate packaging requirements in special provisions A3 and A6 be removed.

Section 173.27(d) of the HMR establishes the type of closure required for transportation of liquid hazardous materials by air. It states that the inner packaging for PG I liquid hazardous materials must have a secondary means of closure applied. The inner packaging for PG II or III liquid hazardous materials must have a secondary closure applied unless the secondary closure is impracticable. If the secondary closure is impracticable, the closure requirements for PG II and III liquids may be satisfied by securely closing the inner packaging and placing it in a leakproof liner or bag before placing the inner packaging in the outer packaging.

Section 173.27(e) sets the absorbency requirements for PG I liquid hazardous materials of Classes 3, 4, or 8, or Divisions 5.1 or 6.1, when the materials are packaged in glass, earthenware, plastic, or metal inner packagings and offered for transport by air. It requires that inner packagings be packed in a rigid and leakproof receptacle or intermediate packaging that is sufficiently absorbent to absorb the entire contents of the inner packaging before the inner package is packed in the outer package.

In the NPRM, PHMSA proposed to: (1) Amend special provision A3 in § 172.102 to authorize rigid and leakproof receptacles for intermediate packaging; (2) remove references to special provision A3 from assigned PG I entries in the HMT; and (3) remove references to special provision A6 from assigned liquids in the HMT.

PHMSA received positive feedback from commenters. Specifically, ALPA and UPS expressed support for this amendment. The DGAC also expressed support for the proposed amendment; however, consistent with their petition, DGAC continues to believe that the secondary closure requirements in § 173.27(d) satisfy the provisions in A3, making A3 unnecessary for PG II and III materials.

As stated in the NPRM, PHMSA agrees that current requirements in § 173.27(d) and (e) make special provisions A3 and A6 unnecessarily redundant for liquid PG I materials. We also agree that the requirements in § 173.27(d) for inner packagings to have a secondary means of closure or a leakproof liner or bag adequately address the hazards that special

provision A6 was designed to mitigate for PG II and III materials. As commenters did not provide any supplemental information or justification for the removal of special provision A3 from the assigned PG II and III entries other than originally included in the petition, PHMSA maintains its position stated in the NPRM that the material of construction of the inner packaging referenced in special provision A3 (glass) necessitates an intermediate packaging to perform a containment function in the event an inner packaging breaks. Therefore, PHMSA is maintaining the intermediate packaging requirements for PG II and III materials in special provision A3; however, we are amending special provision A3 to authorize rigid and leakproof receptacles for use as intermediate packagings that are currently limited to metal construction. This will provide a wider range of intermediate packaging options to shippers of hazardous materials subject to special provision A3.

Additionally, in the NPRM, PHMSA solicited comment on maintaining special provision A6 for currently assigned solid materials or whether revisions to the packaging provisions for these materials should be considered in a future rulemaking. Special provision A6 is currently assigned to four solid materials (UN Nos. 1326, 1390, 1889, and 3417) in the HMT. Unlike the liquids currently assigned special provision A6, these solid materials are not subject to the intermediate or secondary packaging provisions in § 173.27. PHMSA received two comments in support of removing special provision A6 from the currently assigned solid materials. The DGAC commented that the special provision is unnecessary because these solid materials are not subject to the intermediate or secondary packaging requirements. UPS supports removing the special provision provided the packaging provisions in § 173.27 are modified to require secondary or intermediate containment for these commodities. Based on the comments received, PHMSA will consider removing special provision A6 from the four solid materials in a future rulemaking.

B. Quantity Limits for Portable Electronic Medical Devices Carried by Passengers, Crewmembers, and Air Operators (P-1649)

Phillips Healthcare petitioned PHMSA to revise § 175.10(a)(18)(i) to increase the quantity limits applicable to the transportation of portable medical electronic devices (e.g., automated

external defibrillators (AED); nebulizers; continuous positive airway pressure (CPAP) devices containing lithium metal batteries; and spare batteries) carried on aircraft by passengers and crewmembers. See P-1649.² The current HMR requirements limit all lithium metal batteries carried on an aircraft by passengers or crewmembers for personal use to a lithium content of not more than 2 grams per battery. The ICAO Technical Instructions allow portable medical electronic devices containing lithium metal batteries and spare batteries for these devices to contain up to 8 grams of lithium content per battery to be carried by passengers with the approval of the operator. The petitioner stated:

A global increase in air travel, as well as a growing aged population in many countries, makes it reasonable to assume that there will be a significant increase in older passengers and passengers with illness. An automated external defibrillator can make the difference between life and death during cardiac arrest.

The petitioner further asserted that the current HMR requirements prohibit many people who need to travel with their portable medical electronic devices from doing so because the lithium content exceeds the amount allowed.

In addition, the petitioner noted that increasing the quantity limits for portable medical electronic devices containing lithium metal batteries and spare batteries would be consistent with section 828 of the “FAA Modernization and Reform Act of 2012” (Pub. L. 112-98, 126 Stat. 133; Feb. 14, 2012),³ which prohibits the Secretary of Transportation from issuing or enforcing any regulation or other requirement regarding the air transportation of lithium cells or batteries if the requirement is more stringent than the requirements of the ICAO Technical Instructions.

In the NPRM, PHMSA proposed to amend § 175.10(a)(18)(i) to authorize passengers and crewmembers to carry on board an aircraft lithium metal battery-powered portable medical electronic devices and two spare batteries for those devices exceeding 2 grams of lithium content per battery, but not exceeding 8 grams of lithium content per battery, with the approval of the operator.

PHMSA received three comments from A4A, COSTHA, and DGAC in support of the proposed amendment.

² See <https://www.regulations.gov/docket?D=PHMSA-2015-0107>.

³ See <http://www.gpo.gov/fdsys/pkg/CRPT-112hrpt381/pdf/CRPT-112hrpt381.pdf>.

A4A commented that the current inability of passengers and crewmembers to carry lithium metal battery-powered portable medical electronic devices exceeding 2 grams imposes unnecessary travel restrictions for passengers with medical needs requiring the equipment. DGAC commented that harmonization with the ICAO Technical Instructions on this issue will benefit the travelers by allowing them to carry life-saving medical devices.

In contrast, ALPA provided comments that oppose the proposed amendment, stating that they do not support changing regulations based on the end use of batteries. Specifically, ALPA notes “batteries installed in a medical device can be the same as used in a non-medical device . . . and are not inherently safer than non-medical devices.” PHMSA agrees with ALPA that hazardous materials are not generally regulated by end-use application when offered as cargo, but rather on the hazard posed during transport. In addition, PHMSA does not dispute ALPA’s assertion that lithium batteries used in medical devices present the same hazard as lithium batteries used in non-medical devices. However, the exceptions for passengers and crewmembers prescribed in § 175.10 do not apply to cargo consignments. Instead, they are based on the need of individual passengers and crewmembers to carry personal items containing relatively small quantities of hazardous materials for common “end-use” items subject to certain conditions. In the 2011–2012 edition of the ICAO Technical Instructions, the 2-gram limit was expanded for medical devices only. Specifically, the limit was expanded to allow for medical devices known to exceed these limits, notably Automated External Defibrillators (AEDs), which typically had a lithium content between 4 and 8 grams.⁴ Therefore, PHMSA is adopting the amendment to § 175.10(a)(18) as proposed in the NPRM consistent with the provisions of the ICAO Technical Instructions.

In addition to the comments above, A4A and COSTHA recommended that PHMSA extend this allowance for lithium metal battery-powered portable medical electronic devices exceeding current regulatory limits to all portable electronic devices powered by lithium metal batteries. They stated that maintaining differences between medical and non-medical devices

increases training costs, adds confusion, and the risk of potential inadvertent non-compliance by aircraft operators who elect to approve portable medical devices exceeding 2 grams of lithium content per battery, but not exceeding 8 grams of lithium content per battery. As this proposal was not presented in the December 5, 2016 NPRM, it is considered beyond the scope of the rulemaking and is not addressed in this final rule.

C. Information to the Pilot-in-Command, Harmonization With the ICAO Technical Instructions (P-1487)

UPS petitioned PHMSA to revise the information to the pilot-in-command requirements to match the ICAO Technical Instructions. The pilot-in-command must receive the information in order to appropriately consider the presence, amount, and location of hazardous materials onboard the aircraft in an emergency. See P-1487.⁵ This information, which also includes the hazard classification, proper shipping name, and packing group of the hazardous materials onboard the aircraft can help inform the decision-making of the pilot-in-command. If an in-flight emergency did occur, the pilot-in-command or the operator’s ground personnel would need to convey information to air traffic control and/or emergency responders in order to support a safe and effective response.

In its petition, UPS asked PHMSA to amend the domestic information to the pilot-in-command requirements in § 175.33 to reduce what it considers extraneous information and more closely align the HMR with existing international practices. The petitioner stated that harmonization with more elements of the ICAO Technical Instructions’ information to the pilot-in-command requirements will reduce the regulatory burden for operators, as well as the costs associated with training employees and contract personnel to two sets of standards.

In the NPRM, PHMSA proposed adding each of the following requirements to the HMR:

1. The operator must provide to the flight dispatcher⁶ the same information as provided on the information to the pilot-in-command;
2. The information must be provided to the pilot-in-command and flight

dispatchers prior to an aircraft moving under its own power;

3. The air operator must retain the pilot-in-command’s confirmation via signature or other appropriate indication that the required information was received; and

4. The person responsible for loading the aircraft must provide a signed confirmation or other form of indication that no damaged or leaking packages or packages showing evidence of damage or leakage were loaded on the aircraft.

PHMSA received comments from A4A, ALPA, DGAC, COSTHA, and UPS providing general support for aligning the information to the pilot-in-command requirements with the ICAO Technical Instructions. UPS commented, “This action will improve consistency between the HMR and ICAO, thereby promoting clarity of requirements, and overall compliance and safety in flight for operations around the world.” DGAC commented, “. . . Harmonizing the provisions of the HMR with those in the ICAO will provide for enhanced safety, minimize potential for errors, enhance training in only one set of harmonized requirements, and otherwise minimize costs of maintaining two systems of operations.”

These and other general changes discussed below will result in PHMSA harmonizing with the ICAO Technical Instructions in regards to the information required to be provided in the information to the pilot-in-command.

- *Requirement that the operator provide the same information to the flight dispatcher that is required to be provided to the pilot-in-command.* In an emergency, a flight dispatcher may be more readily able to communicate with air traffic control and emergency responders about the nature and location of hazardous materials onboard an aircraft than the pilot-in-command. Harmonizing with the ICAO Technical Instructions and requiring flight dispatchers to have the same information as the pilot-in-command regarding the nature, amounts, and locations of hazardous materials improves information sharing in an emergency situation. Incorporating this provision into the HMR is also relevant to the National Transportation Safety Board’s (NTSB) Safety Recommendation A-11-042, which recommends that the FAA “develop a method to quickly communicate information regarding the number of persons on board and the presence of hazardous materials to emergency responders when airport

⁵ See <https://www.regulations.gov/docket?D=PHMSA-2006-26159>.

⁶ For the purposes of this rulemaking the “flight dispatcher” refers to the personnel with responsibilities for operational control of the aircraft (e.g., the flight operations officer, flight dispatcher, or designated ground personnel responsible for flight operations).

⁴ See paragraph 5.4.10 of ICAO Dangerous Goods Panel Working Paper DGP/22-WP/100 (October 2009).

emergency response or search and rescue is activated.”⁷

Consistent with the ICAO Technical Instructions, operators are responsible to specify the personnel to be provided the information to the pilot-in-command in their operations manual and/or other appropriate manuals. The term “provided” covers the information to the pilot-in-command when made available in a handwritten, printed, or electronic format.

Providing an additional and potentially quicker means for airport rescue and firefighting (ARFF) personnel to receive the information to the pilot-in-command underscores that the ARFF community is as much an intended consumer of the information as is the pilot-in-command. ARFF training in hazardous materials incidents is required under 14 CFR part 139, which specifies the FAA’s requirements for certificated airports.

PHMSA received comments from A4A, COSTHA, and UPS concerning use of the term “written” in the proposed paragraphs § 175.33(a) and (b)(2). A4A and COSTHA commented that the “accurate and legible written information” language in proposed § 175.33(a) and the “copy of the written notification” language in proposed § 175.33(b)(2) do not support electronic notification method as air operators continue to move away from paper documents towards electronic systems for messaging and direct information upload to, and retrieval from, the cockpit. In their comments, A4A stated, “Electronic storage and messaging allows the most up-to-date and accurate documentation to be retrieved by flight crews, dispatchers and ground personnel at any time, providing a safety enhancement in addition to considerable cost and environmental benefits.” UPS commented that including the “legible written” language in the proposed § 175.33(a) allows for the interpretation that a printed information to the pilot-in-command is required for issuance to the pilot-in-command, as well as having the unintended effect of requiring printed information to be furnished to a flight dispatcher or equivalent operator employee. UPS explained that large carrier operations such as theirs would face difficulties as “information is readily available in other formats and the task of managing printed copies would be inefficient and contrary to technological advances.” The three commenters provided similar

alternative language removing the word “written” from paragraphs (a) and (b)(2).

The intent of the NPRM was to more closely align the information to the pilot-in-command provisions in the HMR with those in the ICAO Technical Instructions. Consistent with the language in the NPRM, the current requirements in both regulations require that the operator of the aircraft provide the pilot-in-command with “accurate and legible written information.” Chapter 7;4.1.1 b) of the ICAO Technical Instructions requires that the aircraft operator provide personnel with responsibilities for operation control of the aircraft (e.g., flight dispatcher) with the same information required to be provided to the pilot-in-command. The ICAO requirement is followed by an example indicating that an operator may satisfy this requirement by providing the flight dispatcher with a copy of the written information provided to the pilot-in-command. However, the requirement in the ICAO Technical Instructions, while using the phrase “copy of the written information” as an example, does not specify the format or method in which the information is provided to the flight dispatcher, but rather only that the information is the same as provided to the pilot-in-command.

PHMSA agrees that the term “written” may not be clear to everyone that the use of an electronic format for the information to the pilot-in-command is allowed. Based on the information provided by the three commenters, this final rule revises paragraphs (a) and (b)(2) to clarify that for the purposes of § 175.33, “written” means in a handwritten, printed, or an electronic format. Therefore, the information provided to both the pilot-in-command and the flight dispatcher may be provided legibly in writing (e.g. handwritten, printed, or electronic format) provided all requirements of the section are met. We recognize the trend of providing the pilot-in-command and flight dispatchers with operational data through electronic means and that the use of electronic means to supplement the pilot-in-command with information about cargo, including hazardous materials, is consistent with current practices. The FAA recognizes that there are multiple electronic means that operators may use to provide information to their pilot-in-command and flight dispatchers.

• *Requirement that the information to the pilot-in-command be provided to the pilot and flight dispatchers prior to an aircraft moving under its own power.* The current HMR require the pilot-in-command to receive written information

meeting the requirements in § 175.33 as early as practicable before departure of the aircraft. Consistent with the ICAO Technical Instructions, PHMSA believes that this information should be provided to both the pilot-in-command and flight dispatchers prior to the aircraft moving under its own power. The pilot-in-command should not be burdened with additional information or processes during taxiing and final preparations for takeoff. This change would also allow the pilot-in-command additional time to address any safety concerns identified after a review of the information before taxiing. For example, the pilot-in-command will be more likely to have the opportunity to physically inspect (e.g., packages, paperwork, etc.), ask questions, or otherwise act on the information if they receive the information prior to the aircraft moving.

• *Requirement that the air operator obtains and retains a confirmation (e.g., a signed confirmation from the pilot-in-command or notation via an operator’s computer system) that the information was received by the pilot-in-command.* The current HMR require the information to be provided to the pilot-in-command by the operator and for the operator to maintain a record of the information to the pilot-in-command for 90 days, but there is no requirement for the pilot-in-command to indicate receipt of the information. To be consistent with the ICAO Technical Instructions, PHMSA is requiring the operator to obtain and retain documentation of the pilot-in-command’s receipt of the information.

• *Requirement for the information provided to the pilot-in-command to have a signed confirmation or some other indication from the person responsible for loading the aircraft that no evidence of damaged or leaking packages were loaded on the aircraft.* The current HMR require a confirmation that no damaged or leaking packages were loaded on board an aircraft, but there is no requirement for a signature or other means of verification from the person responsible for loading the aircraft. The requirement for the information provided to the pilot-in-command to have a signed confirmation or other indication from the person responsible for loading ensures that there is no evidence of damage to or leakage from the packages or evidence of leakage from the unit load device loaded on an aircraft which provides for a more accountable safety system.

• *General harmonization with the ICAO Technical Instructions in regards to information required to be provided in the information to the pilot-in-*

⁷ See <http://www.ntsb.gov/safety/safety-recs/reclatters/A-11-039-047.pdf>.

command associated with (and linked to) requirements for shipping papers. The current HMR require the additional description requirements of §§ 172.202 and 172.203 to be provided in the information to the pilot-in-command. These additional information requirements necessitate the inclusion of items such as descriptions of the physical or chemical form of radioactive materials, an indication that the materials being transported are packaged under limited quantity exceptions, an indication that marine pollutants are present, etc. By aligning with the ICAO Technical Instructions, PHMSA believes that the removal of additional description requirements from the information to the pilot-in-command will result in decreased complexity and training costs for operators without negatively impacting safety. In the NPRM, we invited comment from the ARFF community pertaining to the effect this proposed rule would have had on past incident or accident responses; however, as no comments were received, we are removing the additional description requirements from the information to the pilot-in-command requirements as proposed.

The current HMR contain a requirement that the information to the pilot-in-command prepared in accordance with the ICAO Technical Instructions must also include any additional elements required to be shown on shipping papers by subpart C of part 171 of this subchapter. The additional elements currently required are: An indication of the "EX Number" for Division 1.4G safety devices; an indication of "RQ" and technical names if applicable for hazardous substances; an indication that the hazardous material is a "Waste" for hazardous wastes; and the inclusion of the words "Poison-Inhalation Hazard" or "Toxic-Inhalation Hazard" and the words "Zone A," "Zone B," "Zone C," or "Zone D" for gases, or "Zone A" or "Zone B" for liquids, as appropriate for Division 2.3 materials meeting the definition of a material poisonous by inhalation. PHMSA is removing the requirement for the information to the pilot-in-command made in accordance with the ICAO Technical Instructions to include these additional elements. This information will still be required on shipping papers.

General harmonization between the HMR information to the pilot-in-command requirements and those found in the ICAO Technical Instructions ensures consistency for operators subject to both regulatory systems, thus reducing the cost of complying with two

different sets of standards. However, the HMR will continue to require that the date of the flight be included on the information to the pilot-in-command, while the current ICAO Technical Instructions do not. Maintaining the flight date adds another safety control to ensure the pilot-in-command has the correct form. As many operators already include the date as a part of their information provided to the pilot-in-command, this amendment will not create an undue administrative burden. PHMSA received one comment from UPS providing support for maintaining the flight date on the information to the pilot-in-command. The ICAO Dangerous Goods Panel (DGP) took action in October 2016 to amend the ICAO Technical Instructions to include the flight date as one of the required fields on the information to the pilot-in-command. This change will align with the HMR and is expected to be reflected in the 2019–2020 ICAO Technical Instructions.

In the NPRM, PHMSA proposed maintaining the existing requirement that a hazardous material carried under the terms of a special permit must be indicated on the information to the pilot-in-command. PHMSA received a comment from UPS stating that the existing term "special permit" is too focused on U.S. regulations. They note that parallel ICAO provision, in Part 7; Section 4.1.1.1 j) refers to a requirement to include, "where applicable, an indication that the dangerous goods are being carried under a State exemption." UPS suggested that the proposed language should be broadened to include a reference to an "equivalent document issued by the appropriate authority of another country," thereby reducing potential variation from the ICAO requirement. PHMSA agrees. Therefore, consistent with the ICAO Technical Instructions, this final rule adds "or under a State exemption as prescribed in the ICAO Technical Instructions" in addition to "special permit." ICAO defines "exemption" as being equivalent to a special permit under the HMR. An "exemption" does not include approvals, which are not required to be indicated on the information to the pilot-in-command.

In their comments, A4A and COSTHA stated that carriers do not prepare the information to the pilot-in-command when the hazardous material does not require a shipping paper, noting that the HMR do not require a shipping paper for lithium cells or batteries prepared in accordance with § 173.185(c) or the corresponding Section II of ICAO Packing Instructions (PI) 965–970. The commenters noted that part 7;4.1.11,

Table 7–9 provides a list of dangerous goods not required to appear in the information to the pilot-in-command. The list includes entries for lithium batteries consigned under the entries UN3090, UN3091, UN3480, and UN3481 when meeting the requirements of Section II of PI 965–970. The commenters noted that the HMR do not have a corresponding exception for these same materials prepared even though a shipping paper is not required. Both commenters suggested incorporating the ICAO provisions by either adding Table 7–9 into § 175.33 or by adding a specific exception stating that lithium batteries prepared in accordance with § 173.185(c) are not required to appear on the information to the pilot-in-command. COSTHA suggested adding exceptions in § 175.33 for all materials listed in Table 7–9 of the ICAO Technical Instructions such as excepted quantities and "UN3373 and Biological substance, Category B" among others.

PHMSA agrees that in instances when a shipping paper is not required, the information for that material is generally not required to appear on the information to the pilot-in-command either. Because a shipping paper contains the information from which the elements of the information to the pilot-in-command are derived, it is impracticable to prepare the information for materials not requiring a shipping paper. We also agree that the HMR do not have a clear exception from the information to the pilot-in-command requirement for lithium batteries prepared in accordance with § 173.185(c), which corresponds with Section II of ICAO PI 965–970. Other materials listed in Table 7–9, such as those offered in excepted quantities (§ 173.4a), and "UN3373 and Biological substance, Category B" (§ 173.199) are sufficiently addressed in their relevant section of the HMR, with an indication that the materials are not otherwise subject to the requirements of the subchapter, to include the requirements of § 175.33, if the applicable conditions are met. Therefore, this final rule clarifies in § 175.33(a)(13) that lithium batteries prepared in accordance with § 173.185(c) are not required to appear on the information to the pilot-in-command, which corresponds with Section II of the applicable ICAO packing instruction.

D. Amendments to Package Inspection (P–1671) and Securing Requirements

Labelmaster Services petitioned PHMSA to amend § 175.30(c)(1) by removing language prohibiting any package, outside container, or overpack

containing hazardous materials from being transported on an aircraft if it has holes. See P-1671.⁸ The petitioner noted that operators and freight forwarders have declined to transport packages with minor abrasions, tears, dents, cuts, small holes, or other minor damage from normal conditions of transportation and handling. Even where these examples of minor damage or holes did not compromise the packaging's integrity, operators and freight forwarders declined to transport them on the basis of § 175.30(c)(1).

PHMSA believes the current restriction prohibiting acceptance of any of these containment methods with holes to be overly prescriptive, especially as the paramount safety requirement is that there must not be any indication that the integrity of the containment method has been compromised. In the NPRM, consistent with the ICAO Technical Instructions, PHMSA proposed to amend § 175.30(c)(1) to remove language prohibiting packages or overpacks containing hazardous materials from being transported on an aircraft simply due to the presence of holes when the holes do not compromise the integrity of the containment device.

PHMSA received comments from A4A, COSTHA, DGAC, and UPS in response to the proposed revision. The DGAC commented in support of the proposed revision as it enhances harmonization and does not compromise safety. UPS commented in support of the proposed revision, noting that the risk of transporting such packages aboard aircraft would not be elevated, and was also supportive of the NPRM preamble language, stating operators are ultimately responsible for the decision to accept such a package for transportation. In their comments, A4A and COSTHA provided support for the NPRM preamble language, stating that operators may continue to have more restrictive standards as a part of their business practice; however, they expressed concern on how package integrity determinations are to be made and whether enforcement officials will accept the aircraft operator's conclusion. COSTHA also commented that aircraft operators receive "knowing" or "constructive knowledge" violations for non-compliance with the HMR, further noting that accidental damage is not a "knowing" violation but that an operator accepting a package with a small hole or abrasion could be considered a "knowing" violation as operators are prohibited from

transporting damaged packages aboard aircraft.

PHMSA expects that the majority of determinations applicable to small holes on the integrity of a package or overpack will be quite evident. If an air operator has any doubt on whether the integrity of the package or overpack has been compromised, and potentially is not suitable for transportation aboard aircraft, it should not be accepted for transport in its present condition. Further, a package or overpack containing only superficial damage not affecting the integrity, and not prohibited by § 175.30(c)(1), would not be considered a damaged package or overpack.

As stated in the NPRM, PHMSA believes the current restriction prohibiting acceptance of any package or overpack with holes to be overly prescriptive, especially as the paramount safety requirement is that there must not be any indication that the integrity of the containment method has been compromised. Therefore, this final rule adopts the revision to § 175.30 as proposed in the December 5, 2016 NPRM with minor editorial clarifications. In reviewing the section during development of the final rule, PHMSA determined that the term "outside container" is not applicable. As per the definition of "strong outer packaging" in § 171.8, it is synonymous with "strong outer container". Therefore "outside container" has the same meaning as outer packaging. Outer packaging is a component of a package, which is already listed. As a result, in this final rule PHMSA is removing "outside container" from paragraphs (b) and (c). In addition, in the NPRM, PHMSA proposed to include "freight container" and "unit load device" in the list of containment devices contained in paragraph (c). The intent was to align with the provisions in ICAO Technical Instructions, but further review found that there is no such provision in the ICAO Technical Instructions. In Part 7;1.3.1 i) of the ICAO Technical Instructions there is a requirement to verify freight containers and unit load devices are not leaking and there is no indication that the integrity has been compromised; however, this is under the activity of conducting an acceptance checklist which the HMR do not require. As a result, in this final rule, we are not listing "freight containers" or "unit load devices" in paragraph (c).

Section 175.88 prescribes requirements for inspection, orientation, and securing packages of hazardous materials aboard aircraft. In the NPRM, PHMSA proposed revisions to § 175.88(c) to require hazardous

materials loaded in an aircraft to be protected from damage, including by the movement of baggage, mail, stores, or other cargo, and further harmonize specific portions of the general loading/securement requirements pertaining to appropriate securing and loading practices of the HMR with those found in the ICAO Technical Instructions. Specifically, PHMSA proposed to revise § 175.88(c) by separating the provisions of the existing paragraph (c) into new subparagraphs (1) and (4), and adding subparagraphs (2) and (3) to align with part 7;2.4.3 of the ICAO Technical Instructions that reads as follows:

When dangerous goods subject to the provisions herein are loaded in an aircraft, the operator must protect the packages of dangerous goods from being damaged, including by the movement of baggage, mail, stores or other cargo. Particular attention must be paid to the handling of packages during their preparation for transport, the type of aircraft on which they are to be carried and the method required to load that aircraft, so that accidental damage is not caused through dragging or mishandling of the packages.

PHMSA received three comments from A4A, COSTHA, and UPS in response to the proposed revisions. The commenters stated that the manner in which the proposed paragraphs are structured may have the unintended effect of applying to activities outside of the aircraft loading process, resulting in subjective conditions that could lead to inappropriate enforcement. COSTHA commented that the proposed requirements "could be interpreted to prohibit industry standard processing and movement of packages and baggage at sorting facilities or conveyor belt operations used to move packages." A4A and UPS commented on the use of "dragging" in proposed paragraph (c)(3). A4A asserted that normal cargo handling practices could be "construed by an inspector" as "dragging" or inadequate protection resulting in a violation and that "such practices include loading of unit load devices and the holds of narrow-body, non-containerized aircraft by leveraging smooth floor surfaces to slide packages into place." UPS commented that the established industry practice of sliding of packages on surfaces (e.g., tables, conveyor belts, floors and other surfaces) may be subject to proposed language in § 175.88(c)(3), noting that the term "dragging" would introduce a basis for enforcement personnel to misinterpret industry package handling methods. UPS further commented that there are aircraft holds, such as those with low ceilings, in which the positioning of or removal of packages

⁸ See <https://www.regulations.gov/docket?D=PHMSA-2015-0281>.

necessitates the sliding or dragging of such packages.

In addition, the commenters suggested that the proposed text is unnecessary because other requirements in the HMR, such as those in §§ 175.30 and 175.90(c), already prevent the loading of damaged packages containing hazardous materials aboard aircraft.

The intent of the revisions to § 175.88(c) is to ensure that hazardous materials are not loaded in an inappropriate manner and that accidental damage is not caused during the loading process. The safety gap addressed in this final rule covers the movement of hazardous materials during the aircraft loading process until the cargo is secured aboard the aircraft. PHMSA acknowledges that certain aircraft types or configurations necessitate sliding or dragging to position the cargo aboard the aircraft. An example of this type of aircraft would be passenger aircraft, which contain smaller “lower hold” cargo

configurations. These “lower hold” configurations are typically 3–4 feet in height, in which operator personnel must get on their knees due to the small hold area and items must be maneuvered by pushing, pulling, and sliding cargo.

PHMSA has reviewed the existing requirements in § 175.88(c), and while these requirements ensure that packages are inspected for damage upon initial acceptance by the operator and forbid placing aboard an aircraft baggage or cargo that is contaminated with hazardous material or appears to be leaking, they do not address accidental damage that may be caused through mishandling of the packages during the loading process. PHMSA agrees that the paragraph structure could be misinterpreted to apply to situations outside of the loading process. Therefore, this final rule revises paragraph (c)(3) consistent with the language suggested by COSTHA in their comments.

III. Section-by-Section Review

The following is a section-by-section review of the amendments in this final rule:

Part 172

Section 172.101

Section 172.101 contains the Hazardous Materials Table (HMT) and provides instructions for its use. Section 172.101(h) describes column (7) of the HMT, which specifies codes for special provisions applicable to hazardous materials. In this final rule, PHMSA is revising the column (7) special provisions.

Specifically, PHMSA is removing: (1) Special provision A3 from all assigned PG I HMT entries in column (7); and (2) special provision A6 from all assigned liquid HMT entries in column (7). Table 1 illustrates the HMT entries for which changes are proposed:

TABLE 1

Proper shipping name	UN ID No.	SP deletion
Acetaldehyde	UN1089	A3
Acetic acid, glacial or Acetic acid solution, with more than 80 percent acid, by mass	UN2789	A6
Acetic acid solution, not less than 50 percent but not more than 80 percent acid, by mass	UN2790	A6
Acetic anhydride	UN1715	A6
Acetyl chloride	UN1717	A6
Alkali metal alloys, liquid, n.o.s.	UN1421	A3
Alkali metal amalgam, liquid	UN1389	A3
Alkali metal dispersions, flammable or Alkaline earth metal dispersions, flammable	UN3482	A3
Alkali metal dispersions, or Alkaline earth metal dispersions	UN1391	A3
Alkylphenols, liquid, n.o.s. (including C2–C12 homologues) (PG I)	UN3145	A6
Allyl iodide	UN1723	A6
Amines, liquid, corrosive, flammable, n.o.s. or Polyamines, liquid, corrosive, flammable, n.o.s. (PG I)	UN2734	A3, A6
Amines, liquid, corrosive, n.o.s., or Polyamines, liquid, corrosive, n.o.s. (PG I)	UN2735	A3, A6
Amyl mercaptan	UN1111	A6
Antimony pentafluoride	UN1732	A6
Benzyl chloroformate	UN1739	A3, A6
Boron trifluoride diethyl etherate	UN2604	A3
Butyl mercaptan	UN2347	A6
Chlorite solution	UN1908	A6
2-Chloropropene	UN2456	A3
Chromium oxychloride	UN1758	A3, A6
Chromosulfuric acid	UN2240	A3, A6
Corrosive liquid, acidic, inorganic, n.o.s. (PG I)	UN3264	A6
Corrosive liquid, acidic, organic, n.o.s. (PG I)	UN3265	A6
Corrosive liquid, basic, inorganic, n.o.s. (PG I)	UN3266	A6
Corrosive liquid, basic, organic, n.o.s. (PG I)	UN3267	A6
Corrosive liquid, self-heating, n.o.s. (PG I)	UN3301	A6
Corrosive liquids, flammable, n.o.s. (PG I)	UN2920	A6
Corrosive liquids, n.o.s. (PG I)	UN1760	A6
Corrosive liquids, oxidizing, n.o.s.	UN3093	A6
Corrosive liquids, toxic, n.o.s. (PG I)	UN2922	A6
Corrosive liquids, water-reactive, n.o.s.	UN3094	A6
Dichloroacetic acid	UN1764	A6
Dichloroacetyl chloride	UN1765	A6
Difluorophosphoric acid, anhydrous	UN1768	A6
Disinfectant, liquid, corrosive, n.o.s.	UN1903	A6
Dyes, liquid, corrosive, n.o.s. or Dye intermediates, liquid, corrosive, n.o.s. (PG I)	UN2801	A6
Ethyl mercaptan	UN2363	A6
Ethyldichlorosilane	UN1183	A3
Fluoroboric acid	UN1775	A6
Fluorophosphoric acid anhydrous	UN1776	A6
Fluorosilicic acid	UN1778	A6

TABLE 1—Continued

Proper shipping name	UN ID No.	SP deletion
Fluorosulfonic acid	UN1777	A3, A6
Hexafluorophosphoric acid	UN1782	A6
Hydrazine, anhydrous	UN2029	A3, A6
Hydriodic acid (PG II)	UN1787	A6
Hydrobromic acid, <i>with not more than 49 percent hydrobromic acid</i> (PG II)	UN1788	A6
Hydrochloric acid (PG II)	UN1789	A6
Hydrofluoric acid and Sulfuric acid mixtures	UN1786	A6
Hydrofluoric acid, <i>with more than 60 percent strength</i>	UN1790	A6
Hydrofluoric acid, <i>with not more than 60 percent strength</i>	UN1790	A6
Hydrogen peroxide and peroxyacetic acid mixtures, <i>stabilized with acids, water, and not more than 5 percent peroxyacetic acid.</i>	UN3149	A6
Hydrogen peroxide, aqueous solutions <i>with not less than 20 percent but not more than 40 percent hydrogen peroxide (stabilized as necessary).</i>	UN2014	A6
Lithium aluminum hydride, ethereal	UN1411	A3
Mercaptans, liquid, flammable, toxic, n.o.s. or Mercaptan mixtures, liquid, flammable, toxic, n.o.s. (PG III)	UN1228	A6
Mercaptans, liquid, toxic, flammable, n.o.s. or Mercaptan mixtures, liquid, toxic, flammable, n.o.s., <i>flash point not less than 23 degrees C.</i>	UN3071	A6
Methyldichlorosilane	UN1242	A3
Morpholine	UN2054	A6
Nitric acid <i>other than red fuming, with at least 65 percent, but not more than 70 percent nitric acid</i>	UN2031	A6
Nitric acid <i>other than red fuming, with more than 20 percent and less than 65 percent nitric acid</i>	UN2031	A6
Nitric acid <i>other than red fuming, with not more than 20 percent nitric acid</i>	UN2031	A6
Nitric acid <i>other than red fuming, with more than 70 percent nitric acid</i>	UN2031	A3
Nitrohydrochloric acid	UN1798	A3
Nitrosylsulfuric acid, liquid	UN2308	A6
Organotin compounds, liquid, n.o.s. (PG I)	UN2788	A3
Oxidizing liquid, corrosive, n.o.s. (PG I)	UN3098	A6
Oxidizing liquid, n.o.s. (PG I)	UN3139	A6
Oxidizing liquid, toxic, n.o.s. (PG I)	UN3099	A6
Perchloric acid <i>with more than 50 percent but not more than 72 percent acid, by mass</i>	UN1873	A3
Phosphorus tribromide	UN1808	A6
Propanethiols	UN2402	A6
Propylene oxide	UN1280	A3
1,2-Propylenediamine	UN2258	A6
Propyleneimine, stabilized	UN1921	A3
Selenium oxychloride	UN2879	A3, A6
Silicon tetrachloride	UN1818	A6
Sulfur chlorides	UN1828	A3
Sulfuric acid, <i>fuming with less than 30 percent free sulfur trioxide</i>	UN1831	A3
Trichloroacetic acid, solution	UN2564	A6
Trifluoroacetic acid	UN2699	A3, A6
Valeryl chloride	UN2502	A6
Vanadium oxytrichloride	UN2443	A6
Vanadium tetrachloride	UN2444	A3, A6
Vinyl ethyl ether, stabilized	UN1302	A3
Xylyl bromide, liquid	UN1701	A6

Section 172.102 Special Provisions

Section 172.102 lists 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. PHMSA is replacing the existing requirement for tightly closed metal receptacles in special provision A3 from § 172.102(b)(2), which applies only to transportation by aircraft, with a requirement for rigid and leakproof receptacles or intermediate packaging packed with absorbent material.

Part 175

Section 175.10

Section 175.10 provides exceptions for passengers, crewmembers, and air operators. PHMSA is revising § 175.10(a)(18)(i) to authorize passengers and crewmembers to carry on board aircraft portable medical electronic devices containing lithium metal batteries with a lithium content exceeding 2 grams per battery, but not exceeding 8 grams of lithium content per battery, and no more than two individually protected lithium metal spare batteries for these portable medical electronic devices each exceeding 2 grams of lithium content, but not exceeding 8 grams of lithium content, with the approval of the

operator. Consistent with the ICAO Technical Instructions and the current HMR prohibitions, spare lithium batteries (*i.e.*, batteries that are not packed with or contained in equipment) of any type and for any application continue to be prohibited from checked baggage. FAA's Safety Alert to Operators (SAFO) 15010 *Carriage of Spare Lithium Batteries in Carry-on and Checked Baggage*⁹ provides additional guidance to operators on this issue.

Section 175.30

Section 175.30 prescribes requirements for the inspection and acceptance of hazardous materials.

⁹(SAFO) 15010 *Carriage of Spare Lithium Batteries in Carry-on and Checked Baggage*.

PHMSA is revising § 175.30(c)(1) to no longer prohibit packages or overpacks containing hazardous materials from being transported on an aircraft if there are one or more holes present when the hole(s) or other indications do not indicate compromised integrity to the package or overpack.

Section 175.33

Section 175.33 establishes requirements for shipping papers and the information to the pilot-in-command when hazardous materials are transported by aircraft. PHMSA is making revisions to harmonize the information to the pilot-in-command requirements in the HMR with those found in the ICAO Technical Instructions. Specifically, we are making revisions to:

- Align the elements that are required to be provided in the information to the pilot-in-command;
- Clarify that information to the pilot-in-command may be in an electronic form;
- Ensure the information to the pilot-in-command is provided to flight dispatchers or, when flight dispatchers are not utilized, other ground support personnel with operational control of the aircraft;
- Harmonize with ICAO requirements addressing when the information must be provided to the pilot-in-command and flight dispatchers;
- Require confirmation via signature or other appropriate indication by the pilot-in-command to indicate that the required information was received;
- Clarify that UN3480, UN3481, UN3090, and UN3091 prepared in accordance with § 173.185(c), except § 173.185(c)(4)(vi), are not required to appear on the information to the pilot-in-command; and
- Require that the information provided to the pilot-in-command contain confirmation via signature or other appropriate indication by the person responsible for loading the aircraft that no damaged or leaking packages or packages showing evidence of damage or leakage have been loaded on the aircraft.

Consistent with the ICAO Technical Instructions, we are also amending § 175.33 by removing the requirement to include additional informational requirements in § 175.33(a)(1)(i) and (ii). This information will continue to be required on shipping papers.

PHMSA has restructured § 175.33 to separate the requirements for the information to the pilot-in-command from those for shipping papers to address comments to the NPRM from UPS stating that the proposed text is

confusing and suggesting revisions to improve clarity.

Section 175.88

Section 175.88 prescribes requirements for inspection, orientation, and securing packages of hazardous materials aboard aircraft. PHMSA is amending § 175.88(c) by separating the provisions of the existing paragraph (c) into new subparagraphs (1) and (4), and adding subparagraphs (2) and (3) to align with part 7;2.4.3 of the ICAO Technical Instructions. Specifically, these new paragraphs will require that hazardous materials be: (1) Secured in an aircraft in a manner that will prevent any change in the orientation of the packages; (2) protected from damage, including by the movement of baggage, mail, stores, or other cargo; (3) loaded so that accidental damage is not caused through dragging or mishandling; and (4) Class 7 (radioactive) materials 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.

IV. Regulatory Analyses and Notices

A. Statutory/Legal Authority for This Rulemaking

This final rule is published under the statutory authority of the Federal hazardous materials transportation law (Federal hazmat law). 49 U.S.C. 5101 *et seq.* Section 5103(b) of the Federal hazmat law authorizes the Secretary of Transportation to prescribe regulations for the safe transportation, including security, of hazardous materials in intrastate, interstate, and foreign commerce. Section 5120(b) of the Federal hazmat law 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. The Secretary has delegated these authorizations to the Administrator for PHMSA. *See* 49 CFR 1.97.

This final rule amends regulations to increase alignment with international standards by incorporating various amendments, including changes to special provisions, packaging requirements, air transport information to the pilot-in-command requirements, and allowances for hazardous materials to be carried on board an aircraft by passengers and crewmembers. To this end, this final rule amends regulations to more fully align the HMR with the ICAO Technical Instructions. The large volume of hazardous materials transported in international commerce

warrants the harmonization of domestic and international requirements to the greatest extent possible.

Harmonization serves to facilitate international commerce, while also promoting the safety of people, property, and the environment by reducing the potential for confusion and misunderstanding that could result if shippers and operators were required to comply with two or more conflicting sets of regulatory requirements. PHMSA's goal is to harmonize without sacrificing the current HMR level of safety or imposing undue burdens on the regulated community. We consulted the FAA in the development of this rule.

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, "Regulatory Planning and Review," 58 FR 51735 (Oct. 4, 1993) and, therefore, was not reviewed by the Office of Management and Budget. Accordingly, this final rule is not considered a significant rule under the Regulatory Policies and Procedures of the Department of Transportation. 44 FR 11034 (Feb. 26, 1979).

Benefits of the Rule

PHMSA analyzed the expected benefits of these provisions in this final rule. Typically, the benefits of rules are derived from (1) enhanced health and safety factors and (2) reduced expenditures, such as private-sector savings, government administrative savings, gains in work time, harmonization impacts, and costs of compliance. In the case of this final rule, most of the benefits will be derived from health and safety factors, as well as reduced compliance costs.

The health and safety benefits specifically attributable to modifications of the information to the pilot-in-command requirements are not easily calculable with any degree of accuracy. The requirements for pilot-in-command's signature and confirmation from the person responsible for loading the aircraft will result in more effective and efficient response in the event of an aviation incident. The requirement that packages be protected from damage during loading operations will result in increased safety and environmental protection. Benefits will also be realized through a more efficient response time because of emergency response personnel having quicker access to hazardous materials information for each flight.

Cost Reducing Aspects of Harmonization

The primary cost savings expected from this final rule result from reduced packaging costs in relation to the removal of special provision A3 from all assigned PG I HMT entries and special provision A6 from all assigned liquid HMT entries. Additionally, while they have not been quantified, PHMSA expects cost savings from the final rule's general harmonization of information to the pilot-in-command requirements and support for the use of electronic formats.

Currently, compliance with special provisions A3 and A6 requires domestic shippers to use extra¹⁰ or more expensive¹¹ materials. Shippers also incur higher freight charges for shipping packages with higher package weights.¹² PHMSA estimates that the partial removal of A3 and complete removal of A6 for liquids, as well as that of the associated intermediate packaging requirements, will provide undiscounted annual cost savings of \$1,814,643 in reduced packaging costs to shippers.

To arrive at these cost savings, PHMSA (1) analyzed commodity flow survey data for commodities assigned A3, A6, or both in the HMR; (2) determined an estimate of total tons of freight for affected commodities offered for transportation by aircraft annually; (3) used this general commodity flow survey data to estimate the number of impacted packages; and (4) determined a cost basis for packages prepared under existing requirements versus requirements in this final rule.

A summary of the cost savings calculation method is as follows. PHMSA estimated the cost savings by comparing the difference in costs between the pre- and post-final rule options for each shipping scenario identified for commodities potentially subject to A3 or A6. For the purposes of this analysis, we assumed that relatively inexpensive metal, plastic, and glass packaging could be used for inner and intermediate receptacles. There are no costs specifically attributable to the A3 compliance requirements because the least cost option for shipping is to use metal or plastic containers, and A3 applies to shipments in glass containers. While some commodities are shipped in glass containers due to various factors (e.g. ensuring product composition is

maintained, customer demand, or specific retail requirements), the analysis assumed that shippers always choose the least cost option. We were unable to quantify the number of A3 shipments that are currently voluntarily offered in glass inner packagings. The potential cost savings per package are due to increased flexibility posed by the use of any rigid intermediate packaging instead of the single metal type currently required.

PHMSA estimated the compliance costs attributable to A6 compliance requirements, which vary by type of shipment and packaging type. For example, the difference in the compliance cost for a one-gallon shipment using UN specification packaging for materials corrosive to metal is estimated at \$3.82 for Packing Groups I, II or III. The estimated number of tons subject to A6 for UN specification packaging (corrosive to metal and PG I) is 641. The number of packages affected depends on the average inner receptacle volumes applicable to each packing group and restriction type. These calculations assume that the density of the chemicals is the same as that of water (*i.e.*, one ton of each affected commodity has a volume of 239.65 gallons). Therefore, if the number of gallons per package for a commodity corrosive to metal and PG I is 0.66, the estimated number of packages per ton for that commodity is 363 (239.65/0.66). Thus, the total number of packages is 232,683 packages = 363 packages/ton multiplied by 641 tons. The total annual shipping cost difference is estimated at \$889,434 by multiplying the cost difference per package noted above of \$3.82 by the number of affected packages, 232,836. Similarly, PHMSA estimates the annual shipping cost difference for UN specification packaging for PG I materials not corrosive to metal at \$159,150 and the total annual shipping cost difference for PG II materials corrosive and not corrosive to metal at \$766,059. Therefore, the annual shipping cost difference for all PGs is estimated at \$1,814,643 (\$889,434 + \$159,150 + \$766,059).

The reduced expenditure cost savings associated with the general harmonization of the information to the pilot-in-command requirements are not easily calculable. Inconsistent hazardous materials regulations result in additional compliance costs for industry and increase compliance training efforts, whereas consistency of regulations reduces regulatory compliance costs and helps to avoid rejected or frustrated shipments. Clarifying that the term "written" in the

information to the pilot-in-command applies to handwritten, printed, or electronic formats supports the use of electronic methods as air operators continue to move away from paper documents and towards electronic systems. Cost savings may be realized by utilizing existing messaging systems for direct upload of information to and retrieval from, the cockpit. In addition, there may be cost savings for operators electing to use electronic information methods as they will not have to physically print the information for use and retention purposes. PHMSA expects the increased harmonization of the HMR and ICAO Technical Instructions to generate cost savings by streamlining the processes for information to the pilot-in-command generation.

Costs of Harmonization

The primary costs associated with this final rule are time costs related to requirements for (1) confirmation via signature or other appropriate indication by the person responsible for loading the aircraft that no damaged or leaking packages were loaded on the aircraft, and (2) confirmation via signature or other appropriate indication by the pilot-in-command to indicate that the required information was received. PHMSA estimates the annual costs associated with harmonizing the HMR information to the pilot-in-command requirements with those found in the ICAO Technical Instructions to be \$795,318. This estimate is the total annual costs in 2016 dollars of the additional costs for pilot (\$465,966) and loader (\$106,845) acknowledgements plus HMR training costs (\$222,507).

A summary of the annual cost calculation is as follows. PHMSA estimates there are between 1,056 and 9,920 projected flights¹³ daily carrying hazmat that would be subject to harmonized HMR and ICAO information to the pilot-in-command requirements with a mean daily value of 5,415 (1,976,475 annual). The estimated pilot acknowledgement cost of \$0.24¹⁴ (based on average pilot salary and five seconds per action) per information received by the pilot-in-command multiplied by the estimated annual number of associated flights results in a total cost of \$465,966. Person(s) responsible for loading the aircraft costs were calculated in the same manner as pilots but with an estimated

¹⁰ A metal container enclosing either a plastic or glass container.

¹¹ A metal or glass container rather than a plastic container.

¹² Having a metal container enclosing a plastic/glass container will add weight. Likewise, using a metal or glass container rather than a plastic container will add weight.

¹³ PHMSA consulted with the FAA to derive the number of affected flights subject to this requirement.

¹⁴ Bureau of Labor Statistics Occupational Employment and Wages, May 2016: 53–2011 Airline Pilots, Copilots, and Flight Engineers,

acknowledgement cost of \$0.05¹⁵ per information to the pilot-in-command resulting in an estimated cost of \$106,845. Based on FAA air operator data, the number of additional employees requiring training is estimated at 2,086 at an estimated training cost of \$107 per trainee per year. The estimated annual expected industry training costs in 2016 dollars would then be \$222,507 = 2,086 employees multiplied by \$107 per employee. PHMSA notes that many air operators already comply with ICAO's information to the pilot-in-command requirements; therefore, it is likely that this analysis has overestimated the cost of harmonization. The HMR currently require confirmation that no damaged or leaking packages have been loaded on the aircraft. In satisfying this current requirement, it is assumed that many operators are already using the specific confirmation requirement (signature or other indication) from the person responsible for loading the aircraft, which would already be accounted for in time costs.

Under current practice, the information is transmitted to the pilot-in-command. We assume the additional provision of identical information to the flight dispatcher (or other personnel) will incur negligible costs, if any, especially as we understand this to be a common industry practice. In the NPRM, PHMSA invited comments on this assumption and on any unanticipated costs associated with the proposed requirement. While PHMSA did not receive any specific comments on additional costs associated with providing the same information to the flight dispatcher, all of the commenters provided strong support for harmonizing with the information to the pilot-in-command provisions of the ICAO Technical Instructions.

Net Cost Savings

Based on the previous discussions of benefits, costs, and cost savings PHMSA estimates the net annual cost savings associated with this final rule (2137-AF10) to be \$1,019,325.

C. Executive Order 13771

Executive Order 13771 ("Reducing Regulation and Controlling Regulatory Costs"), issued January 30, 2017, provides that "it is essential to manage the costs associated with the governmental imposition of private expenditures required to comply with Federal regulations." Toward that end, E.O. 13771 directs agencies to (1)

identify two potential deregulatory actions for each new E.O. 13771 regulatory action, and (2) limit the incremental costs of new regulations overall on a fiscal year basis. This final rule is considered an E.O. 13771 deregulatory action. Details on the estimated cost savings of this final rule are described above.

D. Executive Order 13132

This final rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13132, "Federalism," 64 FR 43255 (Aug. 10, 1999). The regulatory changes in this final rule preempt State, local, and Indian tribe requirements but do not have 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 materials 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, reconditioning, 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 (2), (3), and (5) above and preempts State, local, and Indian tribe requirements not meeting the "substantively the same" standard. This final rule is necessary to harmonize with international standards. If the changes are not adopted into the HMR, U.S. companies—including numerous small entities competing in foreign markets—would be at an economic disadvantage because of their need to comply with a dual system of regulations. The changes in this rulemaking are intended to avoid this

result. Federal hazardous materials transportation law provides 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. 49 U.S.C. 5125(b)(2). 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. PHMSA is setting the effective date of Federal preemption to be 90 days from publication of a final rule in this matter.

E. 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," 65 FR 67249 (Nov. 9, 2000). Because this final rule does not have tribal implications, does not impose substantial direct compliance costs, and is required by statute, the funding and consultation requirements of Executive Order 13175 do not apply.

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

This final rule was developed in accordance with Executive Order 13272, "Proper Consideration of Small Entities in Agency Rulemaking," 67 FR 53461 (Aug. 16, 2002) and DOT's Policies and Procedures to promote compliance with the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, and ensure that potential impacts of draft rules on small entities are properly considered. The Regulatory Flexibility Act requires an agency to review regulations to assess their economic impact on small entities, unless the agency determines that a rule is not expected to have a significant economic impact on a substantial number of small entities.

This final rule facilitates the transportation of hazardous materials in international commerce by increasing consistency with international standards. It applies to offerors and carriers of hazardous materials, some of whom are small entities, such as chemical manufacturers, users and suppliers, packaging manufacturers, distributors, aircraft operators, and training companies. As previously discussed in Section IV, Subsection B (Executive Order 12866, Executive Order 13563, and DOT Regulatory Policies and Procedures), PHMSA expects that the majority of amendments in this final rule will result in cost savings and ease the regulatory compliance burden for shippers engaged in domestic and international

¹⁵ Occupational Employment and Wages, May 2016: 53–1011 Aircraft Cargo Handling Supervisors.

commerce, including trans-border shipments within North America. Many companies will realize economic benefits as a result of these amendments. Additionally, the changes effected 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, we certify that these amendments will not have a significant economic impact on a substantial number of small entities.

G. Paperwork Reduction Act

PHMSA currently has an approved information collection under Office of Management and Budget (OMB) Control Number 2137-0034, "Hazardous Materials Shipping Papers and Emergency Response Information." We anticipate that this final rule will result in an increase in the annual burden of this information collection because of an increase in the amount of time needed to complete the information to the pilot-in-command due to additional requirements for (1) confirmation via signature or other appropriate indication by the person responsible for loading the aircraft that no damaged or leaking packages were loaded on the aircraft, and (2) confirmation via signature or other appropriate indication by the pilot-in-command that the required information was received. PHMSA did not receive any comments on the changes to this information collection burden in response to the NPRM.

This rulemaking identifies a revised information collection that PHMSA will submit to OMB for approval based on the requirements in this final rule. PHMSA has developed burden estimates to reflect changes and estimates that the information collection and recordkeeping burden in this rule are as follows:

OMB Control Number: 2137-0034.

Annual Increase in Number of Respondents: 150.

Annual Increase in Annual Number of Responses: 1,976,475.

Annual Increase in Annual Burden Hours: 5,474.

Annual Increase in Annual Burden Costs: \$572,811.

PHMSA will submit the revised information collection and recordkeeping requirements to OMB for approval.

H. 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 the Spring and Fall of each year. The RIN contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

I. 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 \$141.3 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.

J. Environmental Assessment

The National Environmental Policy Act of 1969, 42 U.S.C. 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 requires 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 action and the alternatives, and (4) the agencies and persons consulted during the consideration process. 40 CFR 1508.9(b).

1. Purpose and Need

In this final rule, PHMSA is amending the HMR to increase harmonization with international standards and to address four petitions for rulemaking submitted by shippers, carriers, manufacturers, and industry representatives. These revisions are intended to harmonize with international standards, while also maintaining or enhancing safety. Specifically, PHMSA, consistent with P-1487, is harmonizing the HMR with the 2017-2018 ICAO Technical Instructions' requirements for the information to the pilot-in-command, for the air operator to provide the information to the pilot-in-command to the flight dispatcher, and for the air operator to obtain and retain a confirmation that the information to the pilot-in-command was received by the pilot-in-command. This final rule addresses three additional petitions for rulemaking (P-1637, P-1649, and P-1671) to: (1) More closely harmonize with the ICAO Technical Instructions in regard to intermediate packaging requirements for certain low and medium danger hazardous materials; (2) add an exception to allow passengers to bring on board an aircraft portable medical electronic devices containing

lithium metal batteries that exceed the current lithium battery limits in § 175.10(a)(18)(i), as well as spare batteries for these devices with the approval of the operator; and (3) remove language prohibiting any package or overpack containing hazardous materials from being transported on an aircraft if it has holes when there is no indication that the integrity of the package or overpack has been compromised. All of these amendments more closely harmonize U.S. regulations with international standards.

This action is necessary to: (1) Fulfill PHMSA's statutory directive to promote transportation safety; (2) fulfill PHMSA's statutory directive under the Administrative Procedure Act (APA) that requires Federal agencies to give interested persons the right to petition an agency to issue, amend, or repeal a rule, 5 U.S.C. 553(e); (3) align the HMR with international transport standards and requirements to the extent practicable in accordance with Federal hazmat law, 49 U.S.C. 5120; and (4) simplify and clarify the regulations in order to promote understanding and compliance. Specifically, this rulemaking achieves these goals by responding to petitions (P-1487, P-1637, P-1649, and P-1671).

With this action, we are more closely align the HMR with international transport standards and requirements, without diminishing the level of safety currently provided by the HMR or imposing undue burdens on the regulated public.

2. Alternatives

In developing this rulemaking, PHMSA considered the following alternatives:

No Action Alternative:

If PHMSA had selected the No Action Alternative, regulations would remain in place and no new provisions would be added. However, efficiencies gained through harmonization in updates to information to the pilot-in-command requirements; intermediate packaging requirements; passenger carriage of portable medical electronic devices containing certain lithium metal batteries; acceptance/transport of packages with small holes that do not compromise the package integrity; ensuring that hazardous materials loaded in an aircraft are protected from damage; etc., would not be realized.

Preferred Alternative:

PHMSA selected the Preferred Alternative. The amendments included in this alternative are more fully addressed in the preamble and regulatory text sections of this final rule. However, they include the following:

(1) *Harmonize the HMR and ICAO Technical Instructions information to the pilot-in-command requirements.* In this final rule, PHMSA is more closely aligning the information to the pilot-in-command requirements in the HMR to the ICAO Technical Instructions. This includes information required, when the information must be provided to the pilot-in-command and flight dispatchers, and requirements for verifying that the information was received by the pilot-in-command.

(2) *More closely harmonize with the ICAO Technical Instructions in regard to intermediate packaging requirements for certain low and medium danger hazardous materials.* In this final rule, PHMSA is removing all references to special provision A6 assigned to liquids in the Hazardous Materials Table. Additionally, this final rule amends special provision A3 to authorize additional intermediate packagings.

(3) *Add an exception to allow passengers, with the approval of the operator, to bring on board an aircraft a portable medical electronic device that exceeds the lithium battery limits in § 175.10(a)(18)(i).* In this final rule, PHMSA is amending § 175.10(a)(18)(i) to increase the quantity limits applicable to the transportation of portable medical electronic devices containing lithium metal batteries and spare batteries for these devices carried on an aircraft. The current HMR limit all lithium metal batteries to a lithium content of not more than 2 grams per battery regardless of end use, whereas the ICAO Technical Instructions allow portable medical electronic devices containing lithium metal batteries with up to 8 grams of lithium (as well as spare batteries for these devices) to be carried on board an aircraft.

(4) *Amend the package inspection and securing requirements.* In this final rule, PHMSA is amending § 175.30(c)(1) to remove language prohibiting any package or overpack containing hazardous materials from being transported on an aircraft if it has holes. Additionally, PHMSA is revising § 175.88(c) to require hazardous materials loaded in an aircraft to be protected from damage, including by the movement of baggage, mail, stores, or other cargo, consistent with general loading requirements found in the ICAO Technical Instructions.

3. Probable Environmental Impacts of the Alternatives

No Action Alternative:

If PHMSA had selected the No Action Alternative, regulations would remain in place and no new provisions would be added. However, efficiencies gained

through harmonization of transport standards would not be realized. Foregone efficiencies in the No Action Alternative include freeing up limited resources to concentrate on air transport hazard communication issues of potentially much greater environmental impact.

Additionally, the Preferred Alternative encompasses enhanced and clarified regulatory requirements, which would result in increased compliance and less environmental and safety incidents. Not adopting the environmental and safety requirements under the No Action Alternative would result in a lost opportunity for reducing environmental and safety-related incidents.

Greenhouse gas emissions would remain the same under the No Action Alternative.

Preferred Alternative:

PHMSA selected the Preferred Alternative. We believe that safety and environmental risks will be reduced and that protections to human health and environmental resources will be increased. Consistency between U.S. and international information to the pilot-in-command requirements can enhance the safety and environmental protection of hazardous materials transportation, reduce compliance costs, increase the flow of hazardous materials from their points of origin to their points of destination (or diversion airport when required), and improve the emergency response in the event of a hazardous materials incident or accident.

Overall, harmonization will result in more targeted and effective training and thereby enhanced environmental protection. These amendments will reduce inconsistent hazardous materials regulations, which can increase the time and cost of compliance training. For ease of compliance with appropriate regulations, operators engaged in the transportation of hazardous materials generally elect to accept and transport hazardous materials in accordance with the ICAO Technical Instructions, as appropriate. Increasing consistency between these international regulations and the HMR allows shippers and carriers to more efficiently train hazmat employees in their responsible functions. PHMSA believes that these amendments, which will increase standardization and consistency of regulations, will result in greater protection of human health and the environment:

(1) *More closely harmonize the HMR and ICAO Technical Instructions information to the pilot-in-command requirements.* Harmonization of

information to the pilot-in-command requirements will (1) allow operators to streamline compliance and training programs, (2) result in emergency response personnel having quicker access to hazmat information for each flight, (3) remove the requirement to supply data elements required under shipping paper provisions, and (4) provide flight dispatchers access to hazmat information and relieve the pilot-in-command of the responsibility of communicating this information to Air Traffic Control (ATC) and Aircraft Rescue and Firefighting (ARFF) personnel.

Greenhouse gas emissions would remain the same under this amendment.

(2) *More closely harmonize with the ICAO Technical Instructions in regard to intermediate packaging requirements for certain low and medium danger hazardous materials.* Deleting the assignment of special provisions A3 (partial) and A6 (for liquids) more closely harmonizes the HMR with ICAO's packing instructions and removes a requirement that, according to the petitioner, is a barrier to trade for U.S. exports, while still maintaining an appropriate level of safety. Existing requirements in § 173.27(d) and (e) for inner packagings to have a secondary means of closure and to be placed in either a rigid and leakproof receptacle or an intermediate packaging with absorbent material make special provisions A3 and A6 redundant for PG I commodities. Additionally, the requirements in § 173.27(d) for inner packagings to have a secondary means of closure or a leakproof liner or bag adequately address the hazards that special provision A6 was designed to mitigate for PG II and III liquid materials.

Greenhouse gas emissions would remain the same under this amendment.

(3) *Add an exception to allow passengers, with the approval of the operator, to bring on board an aircraft a portable medical electronic device that exceeds the lithium metal battery limits in § 175.10(a)(18)(i).* Harmonizing with the ICAO Technical Instructions in this area will assist the traveling public who rely on their portable medical electronic devices powered by lithium metal batteries. This revision will be consistent with the FAA Modernization and Reform Act.

Greenhouse gas emissions would remain the same under this amendment.

(4) *Amend the package inspection and securing requirements.* Harmonizing with the ICAO Technical Instructions in this area will address the overly prescriptive requirements for package inspection and securing, which

currently result in acceptance rejections from operators and freight forwarders. Further, harmonization will result in more targeted and effective training and thereby enhanced environmental protection. These amendments will reduce inconsistent hazardous materials regulations, which hamper compliance training efforts.

Greenhouse gas emissions would remain the same under this amendment.

4. Agencies Consulted

PHMSA coordinated with the U.S. Federal Aviation Administration, the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, and the U.S. Coast Guard, in the development of this final rule. PHMSA considered the views expressed in comments to the NPRM submitted by members of the public, State and local governments, and industry.

5. Conclusion

The provisions of this final rule build on current regulatory requirements to enhance the transportation safety and security of shipments of hazardous materials transported by aircraft, thereby reducing the risks of an accidental or intentional release of hazardous materials and consequent environmental damage. PHMSA concludes that the net environmental impact will be positive and that there are no significant environmental impacts associated with this final rule.

K. Privacy Act

In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to www.regulations.gov, as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at www.dot.gov/privacy.

L. Executive Order 13609 and International Trade Analysis

Under Executive Order 13609, "Promoting International Regulatory Cooperation," 77 FR 26413 (May 4,

2012), agencies must consider whether the impacts associated with significant variations between domestic and international regulatory approaches are unnecessary or may impair the ability of American business to export and compete internationally. In meeting shared challenges involving health, safety, labor, security, environmental, and other issues, international regulatory cooperation can identify approaches that are at least as protective as those that are or would be adopted in the absence of such cooperation.

International regulatory cooperation can also reduce, eliminate, or prevent unnecessary differences in regulatory requirements.

Similarly, 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 and the FAA participate in the establishment of international standards to protect the safety of the American public. We have assessed the effects of this final rule to ensure that it does not cause unnecessary obstacles to foreign trade. In fact, the final rule is designed to facilitate international trade by eliminating differences between the domestic and international air transportation requirements. Accordingly, this rulemaking is consistent with Executive Order 13609 and PHMSA's obligations under the Trade Agreement Act, as amended.

M. National Technology Transfer and Advancement Act

The National Technology Transfer and Advancement Act of 1995, 15

U.S.C. 272 note, directs Federal agencies to use voluntary consensus standards in their regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, specification of materials, test methods, or performance requirements) that are developed or adopted by voluntary consensus standard bodies. This final rule does not involve voluntary consensus standards.

List of Subjects

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 175

Hazardous materials transportation, Incorporation by reference, Operators, Reporting and recordkeeping requirements.

In consideration of the foregoing, PHMSA is amending 49 CFR chapter I as follows:

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

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

Authority: 49 U.S.C. 5101–5128, 44701; 49 CFR 1.81, 1.96 and 1.97.

- 2. In § 172.101, the Hazardous Materials Table is amended by revising the following entries in the appropriate alphabetical sequence:

§ 172.101 Purpose and use of the hazardous materials table.

* * * * *

BILLING CODE 4910-60-P

(1) Symbols	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class or division	(4) Identification No.	(5) PG	(6) Label codes	(7) Special provisions (§ 172.102)	(8) Packaging (§ 173.***)			(9) Quantity limitations (see §§ 173.27 and 175.75)		(10) Vessel stowage
							(8A) Exceptions	(8B) Non-bulk	(8C) Bulk	(9A) Passenger aircraft/rail	(9B) Cargo aircraft only		(10A) Location	(10B) Other
	Acetaldehyde	* 3	UN1089	I	3	B16, T11, TP2, TP7	* None	201	* 243	* Forbidden	30 L	E
	Acetic acid, glacial or Acetic acid solution, with more than 80 percent acid, by mass	* 8	UN2789	II	8, 3	A3, A7, A10, B2, IB2, T7, TP2	* 154	202	* 243	* 1 L	30 L	A
	Acetic acid solution, not less than 50 percent but not more than 80 percent acid, by mass	8	UN2790	II	8	148, A3, A7, A10, B2, IB2, T7, TP2	154	202	242	1 L	30 L	A
	Acetic anhydride	* 8	UN1715	II	8, 3	A3, A7, A10, B2, IB2, T7, TP2	* 154	202	* 243	* 1 L	30 L	A
	Acetyl chloride	* 3	UN1717	II	3, 8	A3, A7, IB1, N34, T8, TP2	* 150	202	* 243	* 1 L	5 L	B
	Alkali metal alloys, liquid, n.o.s.	* 4.3	UN1421	I	4.3	A2, A7, B48, N34, W31	* None	201	* 244	* Forbidden	1 L	D
	Alkali metal amalgam, liquid	4.3	UN1389	I	4.3	A2, A7, N34, W31	None	201	244	Forbidden	1 L	D
	Alkali metal dispersions, flammable or Alkaline earth metal dispersions	* 4.3	UN3482	I	4.3, 3	A2, A7, W31	* None	201	* 244	* Forbidden	1 L	D
	Alkylphenols, liquid, n.o.s. (including C2-C12 homologues)	* 8	UN3145	I	8	T14, TP2	* None	201	* 243	* 0.5 L	2.5 L	B
	Allyl iodide	* 3	UN1723	II	3, 8	A3, IB1, N34, T7, TP2, TP13	* 150	202	* 243	* 1 L	5 L	B
G	Amine, liquid, corrosive, flammable, n.o.s. or Polyamines, liquid, corrosive, flammable, n.o.s.	* 8	UN2734	I	8, 3	N34, T14, TP2, TP27	* None	201	* 243	* 0.5 L	2.5 L	A
		II			8, 3	IB2, T11, TP2, TP27	None	202	243	1 L	30 L	A

G	Amines, liquid, corrosive, n.o.s. or Polyamines, liquid, corrosive, n.o.s.	8	UN2735	I	8	B10, N34, T14, TP2, TP27.	None	201	243	0.5 L	2.5 L	A	52
				II	8	B2, IB2, T11, TP1, TP27.	154	202	242	1 L	30 L	A	52
				III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	52
*	Amyl mercaptan	3	UN1111	*	3	A3, IB2, T4, TP1	None	202	242	5 L	60 L	B	95, 102
*	Antimony pentafluoride	8	UN1732	II	8, 6.1	A3, A7, A10, IB2, N3, N36, T7, TP2.	None	202	243	Forbidden	30 L	D	40, 44, 89, 100, 141
*	Benzyl chloroformate	8	UN1739	I	8	B4, N41, T10, TP2, TP13.	None	201	243	Forbidden	2.5 L	D	40
*	Boron trifluoride diethyl etherate.	8	UN2604	I	8, 3	A19, T10, TP2, W31	None	201	243	0.5 L	2.5 L	D	40
*	Butyl mercaptan	3	UN2347	II	3	A3, IB2, T4, TP1	150	202	242	5 L	60 L	D	52, 95, 102
*	Chlorite solution	8	UN1908	II	8	A3, A7, B2, IB2, N34, T7, TP2, TP24.	154	202	242	1 L	30 L	B	26, 44, 89, 100, 141
				III	8	A3, A7, B2, IB3, N34, T4, TP2, TP24.	154	203	241	5 L	60 L	B	26, 44, 89, 100, 141
*	2-Chloropropene	3	UN2456	I	3	N36, T11, TP2	150	201	243	1 L	30 L	E	
*	Chromium oxychloride	8	UN1758	I	8	A7, B10, N34, T10, TP2	None	201	243	0.5 L	2.5 L	C	40, 66, 74, 89, 90
*	Chromosulfuric acid	8	UN2240	I	8	A7, B4, B6, N34, T10, TP2, TP13.	None	201	243	0.5 L	2.5 L	B	40, 66, 74, 89, 90
*	Corrosive liquid, acidic, inorganic, n.o.s.	8	UN3264	I	8	B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
				II	8	386, 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	Corrosive liquid, acidic, organic, n.o.s.	8	UN3265	I	8	B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
				II	8	148, B2, IB2, T11, TP2, TP27.	154	202	242	1 L	30 L	B	40
				III	8	386, IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
G	Corrosive liquid, basic, inorganic, n.o.s.	8	UN3266	I	8	T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40, 52
				II	8	386, B2, IB2, T11, TP2, TP27.	154	202	242	1 L	30 L	B	40, 52
				III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40, 52
G	Corrosive liquid, basic, organic, n.o.s.	8	UN3267	I	8	B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40, 52
				II	8	B2, IB2, T11, TP2, TP27.	154	202	242	1 L	30 L	B	40, 52
				III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40, 52

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identification No.	PG	Label codes	Special provisions (§ 172.102)	Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Vessel stowage	
							Exceptions (8A)	Non-bulk (8B)	Bulk (8C)	Passenger aircraft/rail (9A)	Cargo aircraft only (9B)	Location (10A)	Other (10B)
G	Corrosive liquid, self-heating, n.o.s.	8	UN3301	I	8, 4.2	B10	None	201	243	0.5 L	2.5 L	D.	
G	Corrosive liquids, flammable, n.o.s.	8	UN2920	I	8, 4.2 8, 3	B2, IB1 B10, T14, TP2, TP27	154	202	242	1 L	30 L	D.	25, 40
G	Corrosive liquids, n.o.s.	8	UN1760	I	8, 3	B2, IB2, T11, TP2, TP27	154	202	243	1 L	30 L	C	25, 40
G	Corrosive liquids, n.o.s.	8	UN3093	I	8	A7, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
G	Corrosive liquids, oxidizing, n.o.s.	8	UN2922	I	8, 5.1 8, 6.1	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
G	Corrosive liquids, toxic, n.o.s.	8	UN2922	I	8, 5.1 8, 6.1	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
G	Corrosive liquids, water-reactive, n.o.s.	8	UN3094	I	8, 4.3	A7	None	201	243	Forbidden	2.5 L	C	89
G	Dichloroacetic acid	8	UN1764	II	8, 4.3	A7, IB2 A7, B10, T14, TP2, TP13, TP27	None	202	243	1 L	30 L	C	89
G	Dichloroacetyl chloride	8	UN1765	II	8	A3, A7, B2, IB2, N34, T8, TP2	154	202	242	1 L	30 L	A	40
G	Difluorophosphoric acid, anhydrous	8	UN1768	II	8	A3, A7, B2, B6, IB2, N34, T7, TP2	154	202	242	1 L	30 L	D	40
G	Disinfectant, liquid, corrosive, n.o.s.	8	UN1903	I	8	A7, B2, IB2, N5, N34, T8, TP2	None	202	242	1 L	30 L	A	40
G	Dyes, liquid, corrosive, n.o.s. or Dye intermediates, liquid, corrosive, n.o.s.	8	UN2801	I	8	11, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B.	
G	Ethyl mercaptan	3	UN2363	I	3	T11, TP2, TP13	None	201	243	Forbidden	30 L	E	95, 102
G	Ethylchlorosilane	4.3	UN1183	I	4.3, 8, 3	A2, A7, N34, T14, TP2, TP7, TP13, W31	None	201	244	Forbidden	1 L	D	21, 40, 49, 100

Fluoroboric acid	*	8	UN1775	....	II	.....	8	.....	*	A7, B2, B15, IB2, N3, N34, T7, TP2.	154	.....	202	.....	242	.....	1 L	.....	*	30 L	.....	A.
Fluorophosphoric acid anhydrous.	*	8	UN1776	....	II	.....	8	.....	*	A7, B2, IB2, N3, N34, T8, TP2.	None	.....	202	.....	242	.....	1 L	.....	*	30 L	.....	A.
Fluorosilicic acid	*	8	UN1778	....	II	.....	8	.....	*	A7, B2, B15, IB2, N3, N34, T8, TP2.	None	.....	202	.....	242	.....	1 L	.....	*	30 L	.....	A.
Fluorosulfonic acid	*	8	UN1777	....	I	.....	8	.....	*	A7, A10, B6, B10, N3, N36, T10, TP2.	None	.....	201	.....	243	.....	0.5 L	.....	*	2.5 L	.....	D
Hydrazine, anhydrous ..	*	8	UN2029	....	I	.....	8, 3, 6.1	....	*	A7, A10, B7, B16, B53	None	.....	201	.....	243	.....	Forbidden	.....	*	2.5 L	.....	D
Hydriodic acid	*	8	UN1787	....	II	.....	8	.....	*	A3, B2, IB2, N41, T7, TP2.	154	.....	202	.....	242	.....	1 L	.....	*	30 L	.....	C.
Hydrobromic acid, with not more than 49 percent hydrobromic acid.	*	8	UN1788	....	II	.....	8	.....	*	A3, IB3, T4, TP1	154	.....	203	.....	241	.....	5 L	.....	*	60 L	.....	C
Hydrochloric acid	*	8	UN1789	....	II	.....	8	.....	*	386, A3, B3, B15, B133, IB2, N41, T8, TP2.	154	.....	202	.....	242	.....	1 L	.....	*	30 L	.....	C.
Hydrofluoric acid and Sulfuric acid mixtures.	*	8	UN1786	....	I	.....	8, 6.1	.....	*	A7, B15, B23, N5, N34, T10, TP2, TP13.	None	.....	201	.....	243	.....	Forbidden	.....	*	2.5 L	.....	D
Hydrofluoric acid, with more than 60 percent strength.	*	8	UN1790	....	I	.....	8, 6.1	.....	*	A7, B4, B15, B23, N5, N34, T10, TP2, TP13.	None	.....	201	.....	243	.....	0.5 L	.....	*	2.5 L	.....	D
Hydrofluoric acid, with not more than 60 percent strength.	*	8	UN1790	....	II	.....	8, 6.1	.....	*	A7, B15, IB2, N5, N34, T8, TP2.	154	.....	202	.....	243	.....	1 L	.....	*	30 L	.....	D
Hydrogen peroxide and peroxyacetic acid mixtures, stabilized with acids, water, and not more than 5 percent peroxyacetic acid.	*	5.1	UN3149	....	II	.....	5.1, 8	.....	*	145, A2, A3, B53, IB2, IP5, T7, TP2, TP6, TP24, TP24.	None	.....	202	.....	243	.....	1 L	.....	*	5 L	.....	D
Hydrogen peroxide, aqueous solutions with not less than 20 percent but not more than 40 percent hydrogen peroxide (stabilized as necessary).	*	5.1	UN2014	....	II	.....	5.1, 8	.....	*	A2, A3, B53, IB2, IP5, T7, TP2, TP6, TP24, TP37.	None	.....	202	.....	243	.....	1 L	.....	*	5 L	.....	D
Lithium aluminum hydride, ethereal.	*	4.3	UN1411	....	I	.....	4.3, 3	.....	*	A2, A11, N34	None	.....	201	.....	244	.....	Forbidden	.....	*	1 L	.....	D

(1) Symbols	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class or division	(4) Identification No.	(5) PG	(6) Label codes	(7) Special provisions (§ 172.102)	(8) Packaging (§ 173.***)			(9) Quantity limitations (see §§ 173.27 and 175.75)		(10) Vessel stowage	
							(8A) Exceptions	(8B) Non-bulk	(8C) Bulk	(9A) Passenger aircraft/rail	(9B) Cargo aircraft only	(10A) Location	(10B) Other
	Mercaptans, liquid, flammable, toxic, n.o.s. or Mercaptan mixtures, liquid, flammable, toxic, n.o.s.	3	UN1228	II	3, 6.1	IB2, T11, TP2, TP27	None	202	243	Forbidden	60 L	B	40, 95, 102
	Mercaptans, liquid, toxic, flammable, n.o.s. or Mercaptan mixtures, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1	UN3071	II	3, 6.1 6.1, 3	B1, IB3, T7, TP1, TP28 IB2, T11, TP2, TP13, TP27	150 153	203 202	242 243	5 L 5 L	220 L 60 L	A C	40, 95, 102 40, 102, 121
	Methylchlorosilane	4:3	UN1242	I	4.3, 8, 3	A2, A7, B6, B77, N34, T14, TP2, TP7, TP13, W31	None	201	243	Forbidden	1 L	D	21, 40, 49, 100
	Morpholine	8	UN2054	I	8, 3	T10, TP2	None	201	243	0.5 L	2.5 L	A	
	Nitric acid other than red fuming, with at least 65 percent, but not more than 70 percent nitric acid.	8	UN2031	II	8, 5.1	B2, B47, B53, IB2, IP15, T8, TP2	None	158	242	Forbidden	30 L	D	66, 74, 89, 90
	Nitric acid other than red fuming, with more than 20 percent and less than 65 percent nitric acid.	8	UN2031	II	8	A212, B2, B47, B53, IB2, IP15, T8, TP2	None	158	242	Forbidden	30 L	D	44, 66, 74, 89, 90
	Nitric acid other than red fuming with not more than 20 percent nitric acid.	8	UN2031	II	8	B2, B47, B53, IB2, T8, TP2	None	158	242	1 L	30 L	D	
	Nitric acid other than red fuming, with more than 70 percent nitric acid.	8	UN2031	I	8, 5.1	B47, B53, T10, TP2, TP12, TP13	None	158	243	Forbidden	2.5 L	D	44, 66, 89, 90, 110, 111
	Nitrohydrochloric acid	8	UN1798	I	8	B10, N41, T10, TP2, TP13	None	201	243	Forbidden	2.5 L	D	40, 66, 74, 89, 90
	Nitrosylsulfuric acid, liquid.	8	UN2308	II	8	A3, A7, B2, IB2, N34, T8, TP2	154	202	242	1 L	30 L	D	40, 66, 74, 89, 90

■ 3. In § 172.102, in paragraph (c)(2), special provision A3 is revised as follows:

§ 172.102 Special provisions.

* * * * *
(c) * * *
(2) * * *

A3 For combination packagings, if glass inner packagings (including ampoules) are used, they must be packed with absorbent material in tightly closed rigid and leakproof receptacles before packing in outer packagings.

* * * * *

PART 175—CARRIAGE BY AIRCRAFT

■ 4. The authority citation for part 175 continues to read as follows:

Authority: 49 U.S.C. 5101–5128, 44701; 49 CFR 1.81 and 1.97.

■ 5. In § 175.10, paragraphs (a)(18) introductory text and (a)(18)(i) are revised to read as follows:

§ 175.10 Exceptions for passengers, crewmembers, and air operators.

(a) * * *
(18) Except as provided in § 173.21 of this subchapter, portable electronic devices (*e.g.*, watches, calculating machines, cameras, cellular phones, laptop and notebook computers, camcorders, medical devices, etc.) containing dry cells or dry batteries (including lithium cells or batteries) and spare dry cells or batteries for these devices, when carried by passengers or crewmembers for personal use. Portable electronic devices powered by lithium batteries may be carried in either checked or carry-on baggage. Spare lithium batteries must be carried in carry-on baggage only. Each installed or spare lithium battery must be of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, part III, sub-section 38.3 and each spare lithium battery must be individually protected so as to prevent short circuits (*e.g.*, by placement in original retail packaging, by otherwise insulating terminals by taping over exposed terminals, or placing each battery in a separate plastic bag or protective pouch). In addition, each installed or spare lithium battery must not exceed the following:

(i) For a lithium metal battery, the lithium content must not exceed 2 grams. With the approval of the operator, portable medical electronic devices (*e.g.*, automated external defibrillators (AED), nebulizer, continuous positive airway pressure (CPAP), etc.) may contain lithium metal batteries exceeding 2 grams, but not

exceeding 8 grams. With the approval of the operator, no more than two lithium metal batteries each exceeding 2 grams, but not exceeding 8 grams, may be carried as spare batteries for portable medical electronic devices in carry-on baggage and must be carried with the portable medical electronic device the spare batteries are intended to operate;

* * * * *

■ 6. In § 175.30, paragraphs (b) introductory text, (c) introductory text, and (c)(1) are revised to read as follows:

§ 175.30 Inspecting shipments.

* * * * *

(b) Except as provided in paragraph (d) of this section, no person may carry a hazardous material in a package or overpack aboard an aircraft unless the package or overpack is inspected by the operator of the aircraft immediately before placing it:

* * * * *

(c) A hazardous material may be carried aboard an aircraft only if, based on the inspection by the operator, the package or overpack containing the hazardous material:

(1) Has no leakage or other indication that its integrity has been compromised; and

* * * * *

■ 7. Section 175.33 is revised to read as follows:

§ 175.33 Shipping paper and information to the pilot-in-command.

(a) When a hazardous material subject to the provisions of this subchapter is carried in an aircraft, the operator of the aircraft must provide the pilot-in-command and the flight dispatcher or other ground support personnel with responsibilities for operational control of the aircraft with accurate and legible written information (*e.g.*, handwritten, printed, or electronic form) as early as practicable before departure of the aircraft, but in no case later than when the aircraft moves under its own power, which specifies at least the following:

(1) The date of the flight;

(2) The air waybill number (when issued);

(3) The proper shipping name (the technical name(s) shown on the shipping paper is not required), hazard class or division, subsidiary risk(s) corresponding to a required label(s), packing group and identification number of the material as specified in § 172.101 of this subchapter or the ICAO Technical Instructions (IBR, see § 171.7 of this subchapter). In the case of Class 1 materials, the compatibility group letter also must be shown.

(4) The total number of packages;

(5) The exact loading location of the packages;

(6) The net quantity or gross mass, as applicable, for each package except those containing Class 7 (radioactive) materials. For a shipment consisting of multiple packages containing hazardous materials bearing the same proper shipping name and identification number, only the total quantity and an indication of the quantity of the largest and smallest package at each loading location need to be provided. For consumer commodities, the information provided may be either the gross mass of each package or the average gross mass of the packages as shown on the shipping paper;

(7) For Class 7 (radioactive) materials, the number of packages overpacks or freight containers, their category, transport index (if applicable), and their exact loading location;

(8) Confirmation that the package must be carried on cargo-only aircraft;

(9) The airport at which the package(s) is to be unloaded;

(10) An indication, when applicable, that a hazardous material is being carried under terms of a special permit or under a State exemption as prescribed in the ICAO Technical Instructions (IBR, see § 171.7 of this subchapter);

(11) The telephone number from whom the information contained in the information to the pilot-in-command can be obtained. The aircraft operator must ensure the telephone number is monitored at all times the aircraft is in flight. The telephone number is not required to be placed on the information to the pilot-in-command if the phone number is in a location in the cockpit available and known to the pilot-in-command;

(12) For UN1845, Carbon dioxide, solid (dry ice), the information required by this paragraph (a) may be replaced by the UN number, proper shipping name, hazard class, total quantity in each cargo compartment aboard the aircraft, and the airport at which the package(s) is to be unloaded; and

(13)(i) For UN3480, Lithium ion batteries, and UN3090, Lithium metal batteries, the information required by this paragraph (a) may be replaced by the UN number, proper shipping name, hazard class, total quantity at each specific loading location, and whether the package must be carried on cargo-only aircraft.

(ii) For UN3480, Lithium ion batteries, and UN3090, Lithium metal batteries, carried under a special permit or a State exemption as prescribed in the ICAO Technical Instructions (IBR, see § 171.7 of this subchapter), must

meet all of the requirements of this section.

(iii) For UN3480, UN3481, UN3090, and UN3091 prepared in accordance with § 173.185(c), except those prepared in accordance with § 173.185(c)(4)(vi), are not required to appear on the information to the pilot-in-command.

(b)(1) The information provided to the pilot-in-command must also include a signed confirmation or some other indication from the person responsible for loading the aircraft that there was no evidence of any damage to or leakage from the packages or any leakage from the unit load devices loaded on the aircraft;

(2) The information to the pilot-in-command and the emergency response information required by subpart G of part 172 of this subchapter shall be readily available to the pilot-in-command and flight dispatcher during flight.

(3) The pilot-in-command must indicate in writing (*e.g.*, handwritten, printed, or electronic form) that the information to the pilot-in-command has been received.

(c) The aircraft operator must—

(1) *For shipping papers.* (i) Ensure a copy of the shipping paper required by § 175.30(a)(2) accompanies the shipment it covers during transportation aboard the aircraft.

(ii) Retain a copy of the shipping paper required by § 175.30(a)(2) or an electronic image thereof, that is accessible at or through its principal place of business and must make the shipping paper available, upon request, to an authorized official of a federal, state, or local government agency at reasonable times and locations. For a

hazardous waste, each shipping paper copy must be retained for three years after the material is accepted by the initial carrier. For all other hazardous materials, each shipping paper copy must be retained by the operator for one year after the material is accepted by the initial carrier. Each shipping paper copy must include the date of acceptance by the carrier. The date on the shipping paper may be the date a shipper notifies the air carrier that a shipment is ready for transportation, as indicated on the air waybill or bill of lading, as an alternative to the date the shipment is picked up or accepted by the carrier. Only an initial carrier must receive and retain a copy of the shipper's certification, as required by § 172.204 of this subchapter.

(2) *For information to the pilot-in-command.* Retain for 90 days at the airport of departure or the operator's principal place of business.

(3) Have the shipping paper and information to the pilot-in-command readily accessible at the airport of departure and the intended airport of arrival for the duration of the flight.

(4) Make available, upon request, to an authorized official of a Federal, State, or local government agency (which includes emergency responders) 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, the aircraft operator must make immediately available to an authorized official of a Federal, State, or local government agency (which includes emergency responders), the documents or

information required to be retained by this paragraph (c).

(5) Specify the personnel to be provided the information required by paragraph (a) of this section in their operations manual and/or other appropriate manuals.

(d) The information required by paragraph (a) of this section and the shipping paper required by (c)(1) of this section may be combined into one document.

■ 8. 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:

(1) Secured in an aircraft in a manner that will prevent any shifting or change in the orientation of the packages;

(2) Protected from being damaged, including by the shifting of baggage, mail, stores, or other cargo;

(3) Loaded so that accidental damage is not caused through dragging or mishandling; and

(4) When containing Class 7 (radioactive) materials, secured in a manner that ensures that the separation requirements of §§ 175.701 and 175.702 will be maintained at all times during flight.

Issued in Washington, DC, on October 5, 2018 under authority delegated in 49 CFR 1.97.

Howard R. Elliott,

Administrator, Pipeline and Hazardous Materials Safety Administration.

[FR Doc. 2018-22114 Filed 10-17-18; 8:45 am]

BILLING CODE 4910-60-P