9. In the *NPRM,* we propose to amend the amateur service rules to eliminate the requirement that an amateur station transmitting a SS emission must automatically use APC to reduce the transmitter power when the station transmits with a power greater than one watt and to reduce from one hundred watts to a peak of ten watts the transmitter power output that an amateur station may transmit when the station is transmitting a SS emission.[1] Because "small entities," as defined in the RFA, are not persons eligible for licensing in the amateur service, this proposed rule does not apply to "small entities." Rather, it applies exclusively to individuals who are the control operators of amateur radio stations. Therefore, we certify that the proposals in this *NPRM,* if adopted, will not have a significant economic impact on a substantial number of small entities.

III. Ordering Clauses

10. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, shall send a copy of this *Notice of Proposed Rulemaking,* including the Initial Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

List of Subjects in 47 CFR Part 97

Radio.

Federal Communications Commission

Marlene H. Dortch,

Secretary.

Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR part 97 as follows:

PART 97—AMATEUR RADIO SERVICE

1. The authority citation for part 97 continues to read as follows:

Authority: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303. Interpret or apply 48 Stat. 1064–1068, 1081–1105, as amended; 47 U.S.C. 151–155, 301–609, unless otherwise noted.

§ 97.313 [Amended]

2. Section 97.311 is amended by removing paragraph (d).

3. Section 97.313 is amended by adding paragraph (j) to read as follows:

§ 97.313 Transmitter power standards.

* * * * *

(j) No station may transmit with a transmitter output exceeding 10 W PEP when the station is transmitting a SS emission type.

[FR Doc. 2010–11386 Filed 5–13–10; 8:45 am]

BILLING CODE 6712–01–P

[1] *See* 47 CFR 97.311(d).

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

49 CFR Parts 171 and 173

[Docket No. PHMSA–07–29364 (HM–231A)]

RIN 2137–AE32

Hazardous Materials; Packages Intended for Transport by Aircraft

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

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: PHMSA proposes to amend requirements in the Hazardous Materials Regulations to enhance the integrity of inner packagings or receptacles of combination packagings containing liquid hazardous material by ensuring they remain intact when subjected to the reduced pressure and other forces encountered in air transportation. In order to substantially decrease the likelihood of a hazardous materials release, the proposed amendments: prescribe specific test protocols and standards for determining whether an inner packaging or receptacle is capable of meeting the pressure differential requirements specified in the regulations and, consistent with the 2011–2012 edition of the International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods by Aircraft (ICAO Technical Instructions), require the closures on all inner packagings containing liquids within a combination packaging to be secured by a secondary means or, under certain circumstances, permit the use of a liner.

DATES: Comments must be received by July 13, 2010.

ADDRESSES: You may submit comments identified by the docket number PHMSA–07–29364 (HM–231A) by any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Fax:* 1–202–493–2251.
- *Mail:* Docket Operations, U.S. Department of Transportation, West Building, Ground Floor, Room W12–140, Routing Symbol M–30, 1200 New Jersey Avenue, SE., Washington, DC 20590.
- *Hand Delivery:* To Docket Operations, Room W12–140 on the ground floor of the West Building, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.

Instructions: All submissions must include the agency name and docket number for this notice at the beginning of the comment. Note that all comments received will be posted without change to the docket management system, including any personal information provided.

Docket: For access to the dockets to read background documents or comments received, go to *http://www.regulations.gov* or DOT's Docket Operations Office (*see* **ADDRESSES**).

Privacy Act: Anyone is able to search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the document (or signing the document, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78).

FOR FURTHER INFORMATION CONTACT: Michael G. Stevens, Office of Hazardous Materials Standards, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., Washington, DC 20590–0001, telephone (202) 366–8553, or Janet McLaughlin, Office of Security and Hazardous Materials, Federal Aviation Administration, U.S. Department of Transportation, 490 L'Enfant Plaza, SW., Room 2200, Washington, DC 20024, telephone (202) 385–4897.

SUPPLEMENTARY INFORMATION:

Contents

I. Background

The Hazardous Materials Regulations (HMR; 49 CFR parts 171–180) authorize a variety of packaging types for the transportation of hazardous materials in commerce. Combination packagings are the most common type of packaging used for the transportation of both liquid and solid hazardous materials by aircraft. A combination packaging consists of one or more inner packagings or one or more articles secured in a non-bulk outer packaging.[1]

Requirements for combination packagings used to transport hazardous materials are set forth in parts 173 and 178 of the HMR. Certain classes and quantities of hazardous materials may be transported in "non-UN standard" combination packagings, which are subject only to the general requirements in subpart B of part 173, including the following:

—The packaging must be designed, constructed, filled, and closed so that it will not release its contents under conditions normally incident to transportation. § 173.24(b)(1).

—The effectiveness of the package must be maintained to withstand minimum and maximum temperatures, changes in humidity and pressure, and shocks, loadings and vibrations normally encountered during transportation. § 173.24(b)(2).

— Each non-bulk packaging must be capable of withstanding, without rupture or leakage, the vibration test procedure specified in § 178.608 of this subchapter, which sets forth a specific test method to measure the vibration capability of a non-bulk packaging. § 173.24a(a)(5).

A packaging authorized for transportation by aircraft must also be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature. § 173.27(c)(1). Inner packagings of combination packagings for which retention of liquid is a basic function must be capable of withstanding the greater of: (1) An internal pressure that produces a gauge pressure of not less than 75 kPa for liquids in Packing Group III of Class 3 or Division 6.1 and 95 kPa for other liquids; *or* (2) a pressure related to the vapor pressure of the liquid to be transported as determined by specified formulae. § 173.27(c). A number of voluntary industry consensus standards have been developed, some of which include test methods intended to evaluate the effects of pressure differential on packagings at the various altitudes experienced in the air transport environment. These standards-setting organizations have also conducted measurement studies and testing to identify the transportation forces a package encounters and developed integrity standards and industry best-practices to ensure the pressure differential capability standard is met. This process assists all parties to design and manufacture packaging with quality standards that could be used to verify conformance with capability requirements. However, these voluntary industry standards are not included or referenced in the HMR, and the HMR do not provide specific guidance to shippers or packaging manufacturers as to how to comply with the pressure differential standards.

Subparts L and M of part 178 contain UN performance standards for non-bulk packagings adopted in PHMSA's "HM–181" final rules in 1990 and 1991. 55 FR 52401 (December 21, 1990); 56 FR 66124 (December 20, 1991). These performance standards criteria replaced the former detailed construction specifications and provide packaging design flexibility that is not possible with detailed design specifications. The performance criteria require design qualification testing and periodic retesting to verify whether a design type meets the performance standards. For combination packagings, drop and stacking testing are required, and the packaging must be "capable" of passing a vibration test. §§ 178.603, 178.606, 178.608. The packaging (including the inner packagings) must be closed for testing, and tests must be carried out on the completed package that is prepared for testing, in the same manner as if prepared for transportation. § 178.602.

In the HM–181 advance notice of proposed rulemaking (47 FR 16268 (April 15, 1982)) and the notice of proposed rulemaking (52 FR 16482 (May 5, 1987)), we proposed to require the hydrostatic pressure test in § 178.605 to be performed on all inner packagings of UN standard combination packaging designs intended for transportation by aircraft. The pressure test would have addressed pressure differentials encountered during air transportation. This amendment was not adopted in the final rule. 55 FR 52402 (December 21, 1990). Instead, consistent with the ICAO Technical Instructions and the HMR in effect at the time, we elected to continue the requirement for all packagings containing liquids offered or intended for transportation aboard aircraft to be capable of withstanding without leakage a specified pressure differential. § 173.27(c).

Since that time, ICAO has added a note to Part 4; 1.1.6 of the Technical Instructions stating that the capability of a packaging to meet the pressure differential performance standard should be determined by testing, with the appropriate test method selected based on packaging type. However, ICAO has not adopted specific test methods in the Technical Instructions.

Because the HMR do not specify test methods for verifying that a packaging meets the pressure differential requirement, some shippers and packaging manufacturers have used historical data (*i.e.,* lack of incidents) and other methods (*e.g.* computer modeling, analogies, or engineering studies) to demonstrate that their packagings satisfy the pressure differential capability requirement. Shippers and packaging manufacturers have differing views on how the requirements are to be verified, and use various test methods to demonstrate compliance. This leads to a non-uniform approach, and it is difficult for PHMSA and FAA to verify whether a package meets the pressure differential requirement because no test report, documentation, or other proof of compliance is required by the HMR. Additionally, it does not provide an effective method of oversight to determine whether regulatory requirements are meeting actual forces encountered in transportation. If there is no control, the evaluation of quality and failure analysis is not possible. Even the most conscientious and safety-focused shippers have difficulty understanding how to comply with the requirements in § 173.27. Other shippers and packaging manufacturers may be taking advantage of the absence of specific requirements for verifying compliance.

The absence of specific test methods in the HMR leads to inconsistencies in package integrity and results in varying levels of compliance among shippers. References to the pressure differential requirements in § 173.27(c) are found throughout the regulations for packagings and packages offered for air transportation and transported by

[1] As a receptacle for a liquid or solid, a non-bulk outer packaging is one that has a maximum capacity of 450 liters (119 gallons) and, for solid contents, a maximum net mass of 400 kg (882 pounds). § 171.8.

aircraft without methods specified to verify compliance with this critical safety requirement. This results in wide disparities in packaging quality and the potential for sub-standard packages to be introduced into the air transport environment, increasing the probability of releases of hazardous materials aboard aircraft. In addition, some shippers or manufacturers may not realize that inner packagings of non-UN standard combination packagings are required to meet the pressure differential capability requirements of the HMR and the ICAO Technical Instructions. This includes packagings authorized under the limited quantity, consumer commodity, and Category B Biological Substance exceptions. A significant percentage of aircraft incidents involving liquid hazardous materials appear to result from failures of these packagings. We strongly believe the introduction of specific test methods and amendments that clarify the requirements for packagings offered for transportation by aircraft will enhance safety by reducing risk and level the playing field for shippers, manufacturers and air carriers alike.

II. Problem

When a package reaches high altitudes during transport, it experiences low pressure on its exterior. This results in a pressure differential between the interior and exterior of the package since the pressure inside remains at the higher ground-level pressure. Higher altitudes create lower external pressures and, therefore, larger pressure differentials. This condition is especially problematic for combination packagings containing liquids. When an inner packaging, such as a glass bottle or plastic receptacle, is initially filled and sealed, the cap must be tightened to a certain torque to obtain sealing forces sufficient to contain the liquids in the packaging. This will require certain forces to be placed upon the bottle and cap threads as well as the sealing surface of the cap or cap liner to ensure the packaging remains sealed. Once at altitude, due to the internal pressure of the liquid acting upon the closure combined with the reduced external air pressure, the forces acting on the threads and the forces acting on the sealing surfaces will not be the same as when the packaging was initially closed. Under normal conditions encountered in air transport (26 kPa reduction in pressure at 8000 ft), the pressure differentials are not overly severe. However, if the compartment is depressurized at altitude or if the compartment is not pressurized at all, such as on certain "feeder" aircraft, the pressure differential may be severe enough to cause package failure and release of the hazardous materials in the aircraft. High-altitude stresses are encountered when cargo and feeder aircraft transport packages in non-pressurized or partially-pressurized cargo holds.

A seemingly "minor" incident can quickly escalate and result in irreversible, possibly catastrophic, consequences. For example, a closure failure of an inner container could cause an outer package to fail, resulting in fumes, smoke or flammable liquid acting as a catalyst to a more serious incident. The interaction of events occurring on aircraft, such as electrical fires, static electricity or other materials interacting with the leaking material, could result in a catastrophic event. The successful testing of inner packaging designs may lower the likelihood of such an event. Taking a systems-safety approach that includes multiple safety processes and redundancies can prevent a minor incident from becoming potentially much worse.

PHMSA, FAA and, more recently, several international competent authorities all agree that the testing of design samples or prototypes of inner packagings or receptacles for pressure differential capability is key to preventing package failure in air transport. Testing also forms the basis of current performance standards in both the HMR and international regulations. Additionally, incident data and compliance verification testing of combination packagings intended for air transport and readily available in the marketplace indicate that an unacceptable number of packagings are not able to withstand pressure differential conditions normally incident to air transportation. Again, the packagings of particular concern are packagings that must be "capable" of meeting pressure differential requirements, but are not required to be certified as meeting a specific performance test method to verify compliance with pressure differential performance standards. Incident data continue to show that packagings are leaking aboard aircraft; this likely is in part attributable to the fact that the HMR do not specifically provide test methods for determining that packagings meet the minimum pressure differential performance necessary to withstand conditions of air transport. It cannot be overemphasized that any incident, such as a package failure, involving hazardous materials in air transportation is unacceptable.

Four recent studies simulated the impact of high-altitude on package integrity. These conditions result in extreme changes in pressure when compared to packages being transported at or close to sea level. These four studies were discussed in detail in the ANPRM published under this docket [73 FR 38361; July 7, 2008] and are available for review at *http://www.regulations.gov.*

In the first study, FAA analyzed incident data from the DOT Hazardous Materials Information System (HMIS) for the years 1998 and 1999 and focused on properly declared hazardous material shipments. The study concluded that of 1,583 air incidents reported to PHMSA, a failure of inner packagings in combination packaging designs contributed to 333 spills or leaks. In the second study, United Parcel Service (UPS) presented its findings to the American Society of Testing and Materials (ASTM) outlining the conditions that packages experience in the air transport environment. In 2002, the FAA initiated a study with Michigan State University (MSU) to replicate actual air and pre- and post-truck transportation conditions to determine which conditions contribute to package failures. In this third study on conditions experienced in air transportation, FAA examined the effects of vibration alone, altitude alone, and a combination of vibration and altitude on the performance of UN standard hazardous material combination packages containing liquids. In 2003, PHMSA also initiated a study with MSU to compare the HMR requirements and the testing used in the FAA/MSU study to provide for a more thorough evaluation of the performance of liquid hazardous materials in combination packagings when subjected to the conditions of air transport. This fourth round of testing was conducted on a smaller number of packaging designs; however, a much greater number of packagings of each design were tested in the study.

During the first half of 2007, PHMSA conducted a comprehensive assessment of hazardous materials transportation incidents occurring in air transportation from 1997 through 2006. This study and its corresponding data may be accessed in the public docket for this rulemaking. The study concluded that there has been no appreciable reduction in package failures over the past 10 years. It is estimated that 191,429 tons of liquid hazardous materials contained in approximately 16.9 million combination packages are transported by aircraft annually. Of that total, the analysis concluded that approximately 483 combination packagings containing liquids fail in air transportation each

year with an average of two incidents reported as "serious." [2] However, any incident, such as a package failure, involving hazardous materials in air transportation is unacceptable.

The 2007 study concluded that of the approximately 483 air incidents reported each year, at least 44 percent involved the failure of inner packaging closures within a combination outer packaging as the primary cause. Such failures could have been the result of pressure differential (packages closed at sea level subjected to lower pressure on planes), stress relaxation of the closure (closures that appear tight but loosen during transportation), improper closures, vibration, or some other cause. The analysis also suggested that most incidents involved combination packagings containing flammable liquids (*e.g.,* paint and paint related material) of varying degrees of hazard. Some additional statistical data from the 2007 incident review include:

- Over 40% of failures of combination packages containing liquids in air transportation involve closures and/or inner receptacles.
- Flammable liquids are the most common liquid hazardous materials released from failed packages in air transportation. If such materials found an ignition source, it could result in a fire or explosion.
- In incident years 2005–2006, 18 of 953 incidents involving combination packagings containing liquids, or 2%, occurred on passenger-carrying aircraft. Although low when compared to incidents occurring on cargo-carrying aircraft, this percentage of package failures continues to be a troubling statistic.
- Combination packages containing liquids that fail in air transportation release an average 2 liters (0.5 gallons) of liquid hazardous materials.

III. ANPRM

On July 7, 2008, PHMSA published an advance notice of rulemaking (ANPRM; 73 FR 38361) seeking to identify cost-effective solutions to reduce incident rates and the potential severity of incident consequences without placing unnecessary burdens on the regulated community. We solicited comments on how to accomplish these goals, including measures to: (1) Enhance the effectiveness of performance testing for packagings used to transport hazardous materials on aircraft; (2) more clearly indicate the responsibilities of shippers that offer packages for air transport in the HMR; and (3) authorize alternatives for enhancing package integrity. We asked a series of questions related to the packaging of liquid hazardous materials in combination packagings that are offered for transportation and transported by aircraft. A total of 13 persons submitted comments in response to the ANPRM; the list of commenters includes:

AHS Association of Hazmat Shippers, Inc.
Ecolab Ecolab, Inc.
ALPA Air Line Pilots Association, International
COSTHA The Council on Safe Transportation of Hazardous Articles, Inc.
IOPP Institute of Packaging Professionals
CPC Chemical Packaging Committee
FedEx Federal Express
ISTA International Safe Transit Association
ASTM ASTM International
ICC ICC The Compliance Center, Inc.
MSU Michigan State University School of Packaging
Viking Viking Packing Specialist
DGAC Dangerous Goods Advisory Council

Commenters generally agree that regulatory changes are necessary to address safety issues related to the transportation of hazardous materials in non-UN standard packagings on board aircraft. However, commenters had varying views on the scope of the safety problem or specific regulatory amendments necessary to eliminate or reduce problems should they exist. Some commenters also questioned the validity of studies conducted and analysis of the underlying data used that motivated PHMSA to initiate rulemaking action. These comments are summarized below.

A. Studies and Data

As indicated previously, recent studies have simulated the impact of high altitudes on packaging integrity. These studies suggest that the current testing requirements (or lack thereof) under the HMR may not adequately address the conditions encountered during air transportation. Moreover, a review of incident data conducted by FAA and PHMSA supports the conclusion that some combination packaging designs used to transport hazardous materials by aircraft may not meet the capability standards mandated under the HMR. Indeed, the testing conducted suggests that the capability standards themselves may not be sufficiently rigorous to ensure that packagings maintain their integrity under conditions normally incident to air transportation. Study data, incidents, and several years of feedback from industry indicate that, without specific standards and protocols, a consistent approach to compliance cannot be achieved. This can lead to a potentially unsafe condition.

Some commenters cited concerns over how two of the studies were conducted or suggested that the problems discussed in the ANPRM may not be as serious as presented. For example, Ecolab identifies what it contends are at least three discrepancies in the two air packaging integrity studies conducted by MSU in 2002 and 2003 on behalf of PHMSA and FAA. Ecolab contends that these discrepancies, identified by CPC and published in a 2006 *Hazmat Packager and Shipper* article, occurred because some of the tests utilized for the studies were not conducted in accordance with the HMR or corresponding international standards. One study allegedly used an improper closure design that differed from the originally tested design. CPC asserted that the improper closure design used in the study raised the number of packaging failures from 14 to 42, an increase of 75%. In its comments, Ecolab contends that a successfully tested package will not leak when closed properly and subjected to normal conditions of air transport. As a result of conclusions drawn from these initial studies and to address challenges made to the assumptions used in their methodology, further studies were budgeted and carried out. PHMSA and FAA acknowledge that some of the studies utilized packagings that did not conform in all respects with HMR requirements. The characteristics of the packagings tested were fully disclosed in the study reports. We do not agree that the minor differences in the closures used affects the conclusions of the studies. We note that the studies were not used to determine compliance with HMR requirements, but rather to measure the capability of commercially available packaging designs to withstand the unique conditions encountered in air transportation.

Although most commenters support the actual testing of inner packaging designs for pressure differential capabilities, several commenters doubt that incidents are occurring in air transport as a result of the lack of actual testing. AHS notes that incident reports submitted to PHMSA in accordance with reporting requirements in § 171.16 of the HMR do not indicate whether an inner packaging failed because it had

[2] The HMR define a "serious incident" as one that involves one or more of the following: (1) A fatality or major injury caused by the release of a hazardous material; (2) the evacuation of 25 or more persons as a result of release of a hazardous material or exposure to fire; (3) a release or exposure to fire which results in the closure of a major transportation artery; (4) the alteration of an aircraft flight plan or operation; (5) the release of radioactive materials from Type B packaging; (6) the release of over 45 liters (11.9 gallons) or 40 kilograms (88.2 pounds) of a severe marine pollutant; or (7) the release of a bulk quantity (over 450 liters (119 gallons) or 400 kilograms (882 pounds)) of a hazardous material. § 171.15.

not been tested or because it was not capable of withstanding forces encountered in transportation. We note that it is highly unlikely that a carrier or other entity without intimate knowledge of a packaging's design or overall integrity would be able to report, as a root cause, that an incident that occurred in air transportation resulted from a lack of actual testing or the packaging's inability to withstand the forces inherent to transportation by aircraft. However, by carefully analyzing available incident data and conducting controlled laboratory studies of commercially available packaging designs, we can conclude that the actual testing for pressure differential capability was either conducted incorrectly or not conducted at all.

COSTHA contends that PHMSA should not be alarmed if leakage from an inner packaging is contained within its outer packaging and suggests that seepage from a closure over time should be evaluated differently than a complete failure where the entire contents of an inner packaging are released within an outer packaging. We disagree. A successfully tested and properly filled and closed inner packaging design should not leak under normal conditions encountered in air transportation. Additionally, an inferior inner packaging design or component would be identified through the pass/fail criteria when originally tested. Because the primary receptacle within a combination packaging system is the most important component of that system in air transport, it should not fail except under extreme or highly abnormal conditions.

Regarding the distribution hazards experienced in today's air transport environment, Ecolab asserts that shipments have always been subjected to multiple flight segments and any consequences resulting from that environment. Ecolab is correct; however, although shipments have routinely utilized multiple flight segments in the past, the proliferation of sort systems and feeder aircraft systems has changed the environment shipments normally encountered during transit. Today, air carriers use multiple mechanical handling systems to sort packages, and the number of distribution points has grown with the natural expansion of commerce.

In its comments, Ecolab states that better enforcement of existing regulations related to packaging integrity is key to reducing the number of incidents in air transportation. We agree. Once verifiable and repeatable testing standards are adopted in the HMR, shippers, packaging test labs, and government regulators can all measure packaging integrity using the same process, procedures, and protocols. Consistency is the most efficient and effective way to measure success or failure. Ecolab also notes that, according to PHMSA's HMIS incident database, human error is cited as an accident cause six times more frequently than packaging failure. An example of human error could be the deliberate or inadvertent consequences resulting from failure to follow a packaging manufacturer's customer notification or closure instructions. An example of packaging failure would be differences in manufacturing tolerances that result in leakage (failure) from an otherwise properly closed inner packaging design. Again, this supports the multi-layered safety system concept.

B. Pressure Differential Testing

In the ANPRM, we noted that because specific test methods are not included in the HMR or the ICAO Technical Instructions, there are inconsistencies in package integrity and varying levels of compliance among shippers. For example, because the pressure differential and vibration capability standards for combination packagings are not required to be verified by test protocols, some shippers (self-certifiers) or manufacturers have used historical shipping data, computer modeling, analogies to tested packagings, engineering studies, or similar methods to determine that their packagings meet pressure differential and vibration capability standards.

Shippers, carriers, packaging manufacturers, and testing facilities generally agree that the current capability requirements for air packagings are difficult to comply with and suggest that specific test methods designed to demonstrate that packagings will withstand conditions encountered during air transportation should be specified in the HMR. Ecolab states that the current regulatory language in the HMR regarding the pressure differential capability of inner packagings should be replaced with recognized industry standards for testing and no additional testing should be proposed. ALPA recommends that the HMR incorporate the language contained in the ICAO Technical Instructions clarifying test methods and responsible parties. For example, the ICAO Technical Instructions suggest test methods appropriate for certain types of inner packagings and liquid hazardous materials in order to promote compliance with the prescribed performance standard. ALPA contends the lack of standardized, easily understandable testing protocol contributes to incidents in air transportation. Ecolab and Viking both agree that, to properly determine the capability of a packaging design, it must first be tested. ISTA asserts that the simultaneous combination of low pressure and vibration exerted on a package is the only way to accurately replicate conditions encountered by a package in air transportation.

The HMR and ICAO Technical Instructions both require that a shipper consider the pressure differential capability for an inner packaging intended to contain a mixture or solution based on its vapor pressure. Many commenters agree that determining the vapor pressure of a mixture or solution is problematic, costly, and does not materially contribute to reducing the likelihood of packaging failure. Ecolab believes that a 95 kPa differential capability is a realistic and attainable indication of inner packaging integrity and that the 75 kPa capability for some hazard classes and packing groups should be eliminated for clarity and increased safety. In addition, Ecolab states that PHMSA should codify any testing protocol adopted in Subpart M of Part 178. Because the proposed amendments in this notice apply to non-UN standard packagings as well as UN standard packagings, and the Part 178 requirements apply to UN standard packagings only, it is appropriate that the amendments proposed in this notice be codified in § 173.27. We appreciate and understand commenter frustration with regard to calculating the vapor pressure of a mixture or solution to determine the appropriate packaging capable of withstanding the prescribed pressure differential. In this NPRM, we are proposing an alternative method that can be used to calculate the appropriate packaging required for a mixture or solution without testing to determine vapor pressure.

C. Alternatives to Testing

The HMR and ICAO Technical Instructions both allow a liquid hazardous material to be contained in an inner packaging that does not itself meet the pressure differential performance standard, provided that the inner packaging is packed within a supplementary packaging that does meet the pressure requirements. In their comments, AHS and ICC ask PHMSA to retain in the HMR the option for a shipper to use supplementary packaging that meets the pressure differential requirements. PHMSA agrees with commenters on this issue and is not

proposing to amend the HMR to do otherwise.

The HMR currently permit the use of variations in inner packagings of a tested combination package, without further testing of the package, provided an equivalent level of performance is maintained under conditions prescribed in § 178.601. ICC states that a packaging designed to successfully withstand the § 178.601(g)(2) Variation 2 test protocols should not be required to contain inner packagings capable of meeting the pressure differential and vibration capabilities of the HMR. We disagree. A primary inner packaging or receptacle of known or questionable inferiority is unacceptable in air transportation regardless of whether the outer packaging is of a higher integrity. No other commenters opposed actual testing of inner packagings of combination packagings intended to contain liquids for transportation by aircraft.

ICAO recently adopted revised packaging instructions for incorporation in the ICAO Technical Instructions that will become effective January 1, 2011. The new packing instructions require a secondary means of closure for all liquids in combination packagings. This requirement may be satisfied by using a liner or other form of containment when the secondary means of closure cannot be applied. Inner packagings containing liquids of Packing Group I must be placed in rigid leakproof receptacles with absorbent material before placing them in outer packagings of a combination package. None of the comments submitted to the ANPRM oppose this requirement; those who did comment on this requirement support its adoption in the HMR.

D. Packaging Components

Many commenters state that pressure differential and vibration capability standards should apply to both specification and non-specification packaging designs. Ecolab asserts that a properly tested and closed inner packaging design offers no risk in air transport. In evaluating the inherent risks assumed in air transportation and the potential for high consequence events should an incident occur, ALPA supports multiple layers of redundancy to include actual testing of inner packaging designs and the use of liners, absorbent material, and secondary means of closure. Commenters agree that the interaction between an inner packaging containing a liquid and its closure are critical in air transport. COSTHA believes that if any component of a tested design is changed, and it is not an exact replacement, quality review and testing is required. Viking believes that a successfully tested inner packaging is only one (albeit a major one) part of a closure system that also uses a protective liner and is properly oriented when stored or transported. PHMSA and FAA both agree that the verification of packaging integrity through testing and the additional redundant amendments proposed in this notice will ensure consistency in the quality of packagings used for the air transport of liquid hazardous materials and mitigate or eliminate the consequences of an incident or accident should one occur.

IV. Summary of Proposals in This NPRM

Because aircraft accidents caused by leaking or breached hazardous materials packages can have significant or catastrophic consequences, the air transportation of hazardous materials requires clear standards, exceptional diligence, and attention to detail. To address the regulatory deficiencies previously described in detail, we are proposing amendments to the HMR to strengthen the integrity of packages intended for transport by aircraft.

Most commenters support adoption of the ICAO Technical Instructions requirement for a secondary means of closure and utilization of a liner if such secondary means of closure is infeasible or impracticable. Further, most commenters agree that the most effective means to ensure that combination packagings are capable of meeting specified performance standards is actual testing. We agree. Therefore, in this NPRM we are proposing to adopt the new ICAO Technical Instructions requirements for combination packagings and test protocols that may be used to demonstrate that such packagings conform to applicable performance standards. If adopted, these amendments will add clarity to the processes required in determining whether a packaging design is capable of meeting the forces encountered in air transportation. We are confident that these enhancements to current regulatory requirements will result in a higher level of safety in air transportation by reducing the likelihood of combination package failures in air transportation.

The following is a summary of the proposals in this NPRM.

A. Incorporation of Revised ICAO Technical Instructions Packaging Provisions

Currently under the HMR, stoppers, corks, or other such friction-type closures must be held securely, tightly, and effectively in place by positive means. See § 173.27(d). However, a screw-type closure on any packaging must only be secured to prevent the closure from loosening due to "vibration or substantial change in temperature." We have stated in letters of clarification that a secured closure should incorporate a secondary means of maintaining a seal, such as a shrink-wrap band or heat sealed liner. (We have included three of those letters (02–0302 dtd. January 23, 2003; 04–0011 dtd. May 12, 2004; 07–0174 dtd. March 17, 2008) in the docket for information and guidance.) Additionally, laboratory studies conducted on behalf of PHMSA and FAA concluded that a simple application of tape on a screw-type closure prevented "back-off" under even extreme conditions. We also note for the purposes of this notice that:

- Liners typically must be manually inserted into a packaging before filling. Because most packaging systems can be automated or are already automated with some form of secondary closure being applied, costs and regulatory burden to shippers should be minimal.
- Most Packing Group I liquids already require a leakproof liner in the HMR and ICAO Technical Instructions.
- A liner or secondary means of positive closure should not affect an existing UN standard packaging design as in most cases it will not be considered a new design.
- Requiring a secondary positive means of closure combined with required verification of pressure differential capability adds a layered systems-approach to air transportation safety.

Packaging failures in air transportation often are the result of closures that have loosened in transportation. Such leaks are potentially dangerous in all modes of transportation, but have the potential for catastrophic results in air transportation. Therefore, we are proposing to revise § 173.27(d) to clearly state that all friction and screw type closures must be secured by a secondary means of positive closure. We believe that adoption of this requirement provides a necessary added level of protection to prevent packages from leaking in air transportation. For liquids assigned to Packing Groups II or III, a leakproof liner may be used to satisfy the secondary closure requirement where it cannot be applied or it is impracticable to apply. For liquids of Packing Group I, we are proposing to revise § 173.27(e) to require secondary means of closure, absorbent material, and a rigid, leakproof liner or

intermediate packaging. Also, for clarity we are proposing to remove the reference to Division 5.2 materials from the § 173.27(e) introductory text.

B. Enhanced Pressure Differential Capability Standard

Currently, the HMR require all packagings containing liquid hazardous materials intended for transportation by aircraft to be capable of withstanding, without leakage, an internal gauge pressure of at least 75 kPa for liquids in Packing Group III of Class 3 or Division 6.1 or 95 kPa for all other liquids, or a pressure related to the vapor pressure of the liquid to be conveyed, whichever is greater. See § 173.27(c). This requirement also applies to liquids excepted from specification packaging, such as limited quantities and consumer commodities. Liquids contained in inner receptacles that do not meet the minimum pressure requirements in § 173.27(c) may be placed into receptacles that do meet the pressure requirements to ensure that the completed packaging—inner receptacles plus outer packaging—will withstand pressures typically encountered in air transportation. Single and composite packagings, or any packaging subject to hydrostatic pressure testing under § 178.605, must have a marked test pressure of not less than 250 kPa for liquids in Packing Group I, 80 kPa for liquids in Packing Group III of Class 3 or Division 6.1, and 100 kPa for other liquids.

As discussed in detail earlier in this preamble and in the ANPRM, testing conducted on behalf of FAA and PHMSA indicates that many combination packagings fail when subjected to conditions intended to simulate the pressures encountered in the air transportation environment. One possible conclusion is that these packagings might not be capable of meeting the pressure differential capability standards. Without testing there is no assurance that these packagings are capable of meeting the prescribed standards. For air transportation, such deficiencies in packaging integrity are unacceptable.

In this notice, we are proposing that conformance with the pressure differential requirements for rigid packagings may be demonstrated by testing performed in accordance with ASTM D6653, "*Standard Test Methods for Determining the Effects of High Altitude on Packaging Systems by Vacuum Method*" or ASTM D4991, "*Standard Test Method for Leakage Testing of Empty Rigid Containers by Vacuum*".

For flexible packaging, we are proposing that conformance with the pressure requirements may be demonstrated by pressure differential testing performed in accordance with ASTM F 1140, "*Standard Test Methods for Internal Pressurization Failure Resistance of Unrestrained Packages for Medical Applications*", ASTM D 3078, "*Standard Test Method for Determination of Leaks in Flexible Packaging by Bubble Emission*" or a generic test method outlined in a proposed new Appendix E to Part 173.

Additional test methods that may be used to confirm pressure differential capability are the hydrostatic pressure test in § 178.605 and the International Safe Transit Association's "*ISTA 3A, Packaged-Products for Parcel Delivery System Shipment 70 kg (150 lb) or Less.*" However, the ISTA 3A test method is considered more costly and complex due to the high cost of equipment and specialized operators needed to conduct it.

We have recently had the privilege of working with the German Federal Institute for Materials Research and Testing (BAM) on the problematic issue of calculating vapor pressures for liquids at the transportation reference temperatures (50–55 °C) as well as for mixtures and solutions. The proposed table in Appendix E of this notice provides guidance on determining these values based on the relationship between boiling points and vapor pressures. It allows the shipper or product manufacturer to estimate the required capability (test pressure) of their packaging based on the individual constituent in a mixture or solution with either the lowest boiling point or the highest vapor pressure at 50 °C. We invite comments on this potentially very positive initiative.

C. Combined Enhanced Pressure Differential Capability Standard and Incorporation of Revised ICAO Technical Instructions Packaging Provisions

Laboratory studies have shown that testing inner packagings or receptacles of commercially available combination packaging designs intended or marketed as authorized for transportation by aircraft achieves an approximate effectiveness rating of 95 percent, with the current compliance rate among shippers unknown. The current compliance rate for the use of liners or secondary means of positive closure by shippers is estimated to be at least 70 to 90 percent, with an effectiveness rate of 95 to 100 percent. Consequently, we have decided to propose in this notice a combination of both regulatory alternatives to achieve our objective of a cost-effective systems approach to safety that provides redundancy where necessary and promotes compliance by issuing regulations that are clear and easier to understand.

D. Vibration Testing

Section 173.27(c) of the HMR prescribes a pressure differential capability standard for inner packagings of combination packagings intended for air transport. In addition, in accordance with § 178.608, combination packagings must be capable of passing a prescribed vibration test. As discussed in detail elsewhere in this preamble, in order to substantially decrease the likelihood of a hazardous materials release in air transport, we are proposing to prescribe specific test protocols and standards for determining whether an inner package or receptacle is capable of meeting the pressure differential requirements specified in the regulations. However, we are not proposing to revise the current vibration capability standard. Testing to ascertain conformance with a pressure differential capability standard is significantly more cost effective than testing to ascertain conformance with a vibration capability standard. Vibration testing generally requires more expensive equipment and specially trained operators. Moreover, laboratory studies have concluded that the application of a secondary means of closure to a packaging capable of withstanding the pressure differentials encountered in air transport substantially reduces the overall failure rate of packages.

It is our understanding that a number of shippers and packaging vendors currently use random vibration tests, such as those in the ISTA 3A or ASTM D 4169 standards, in combination with pressure differential testing for packagings intended for air transport. While the HMR prescribe a specific vibration test protocol, it appears that the recognized random vibration test methods, combined with pressure differential testing, achieve the intent of the test protocols in the HMR—that is, to ensure that the packaging will withstand environmental conditions normally encountered in air transportation. In our opinion, the use of sequential or combined pressure differential and vibration testing in accordance with ISTA, ASTM, or other test protocols would exceed the current capability standards for pressure differential and vibration for packages intended for air transportation. We would consider that inner containers demonstrating conformance to these standards would not be required to

undergo further testing for pressure or vibration capability standards when placed in an outer packaging for packages intended for air transportation. As discussed in greater detail in Section III of this notice, for certain types of packagings, the HMR provide for separate testing of packaging components so that if one component conforms to the applicable performance standard, the secondary components need not meet those standards.

V. Rulemaking Analysis and Notices

A. Statutory/Legal Authority for This Rulemaking

This NPRM is published under authority of Federal hazardous materials transportation law (Federal hazmat law; 49 U.S.C. 5101 *et seq.*). Section 5103(b) of 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.

B. Executive Order 12866 and DOT Regulatory Policies and Procedures

This proposed rule is a significant regulatory action under section 3(f) Executive Order 12866 and, therefore, was reviewed by the Office of Management and Budget (OMB). The proposed rule is a significant rule under the Regulatory Policies and Procedures order issued by the U.S. Department of Transportation (44 FR 11034). We have completed a regulatory evaluation and placed it in the docket for this rulemaking.

In this rulemaking, we considered three regulatory alternatives: (1) Require a secondary means of closure on inner packagings or a liner in all combination packaging designs containing liquids; (2) require testing to determine whether an inner packaging intended to contain liquids is capable of withstanding the reduced pressures of air transport; or (3) require a combination of both regulatory alternatives. We are proposing the combination alternative, number 3. Costs for the combination alternative range from $2.2M to $5.7M while net benefits range from $41.6M to $67.9M. at a 7% discount rate over a 10-year period. Benefit-cost ratios for the combination alternative range from 7.3:1 to 31.5:1. We invite commenters to address the potential costs of the enhanced packaging requirements in this notice, including the number of inner and outer packaging designs that would be affected.

C. Executive Order 13132

This notice has been analyzed in accordance with the principles and criteria contained in Executive Order 13132 (“Federalism”). This notice preempts State, local and Indian tribe requirements but does not propose any regulation with 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. 5101–5127, contains an express preemption provision (49 U.S.C. 5125(b)) preempting State, local and Indian tribe requirements on the following subjects:

(1) The designation, description, and classification of hazardous materials;

(2) The packing, repacking, handling, labeling, marking, and placarding of hazardous materials;

(3) The preparation, execution, and use of shipping documents related to hazardous materials 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; or

(5) The design, manufacture, fabrication, marking, maintenance, recondition, repair, or testing of a packaging or container represented, marked, certified, or sold as qualified for use in transporting hazardous material.

This notice addresses covered subject item (5) described above and preempts State, local, and Indian tribe requirements not meeting the “substantively the same” standard.

Federal hazardous materials transportation law provides at 49 U.S.C. 5125(b)(2) that, if DOT issues a regulation concerning any of the covered subjects, DOT must determine and publish in the **Federal Register** the effective date of Federal preemption. The effective date may not be earlier than the 90th day following the date of issuance of the notice and not later than two years after the date of issuance. The effective date of Federal preemption of this notice will be 90 days from publication in the **Federal Register**.

D. Executive Order 13175

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

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

The Regulatory Flexibility Act (5 U.S.C. 601–611) requires each agency to analyze proposed regulations and assess their impact on small businesses and other small entities to determine whether the proposed rule is expected to have a significant impact on a substantial number of small entities. A regulatory evaluation for this NPRM, which includes a detailed small business impact analysis, is in the public docket for this rulemaking. Based on the analysis in the public docket, I certify that while this notice will impact a significant number of small entities, it will not have a significant economic impact on a substantial number of small entities.

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

F. Unfunded Mandates Reform Act of 1995

This notice does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It will not result in costs of $141.3 million or more, in the aggregate, to any of the following: State, local, or Native American tribal governments, or the private sector.

G. Paperwork Reduction Act

PHMSA currently has an approved information collection under Office of Management and Budget (OMB) Control Number 2137–0572, “Testing Requirements for Non-Bulk Packaging,” with an expiration date of March 31, 2010. This NPRM may result in an increase in the annual burden and costs of this information collection due to proposed changes to require packaging manufacturers to conduct testing to confirm that a combination packaging intended for the air transportation of liquid hazardous materials is capable of withstanding the pressures encountered on board aircraft and to maintain a documented record of the test results.

Under the Paperwork Reduction Act of 1995, no person is required to respond to an information collection

unless it has been approved by OMB and displays a valid OMB control number. Section 1320.8(d), title 5, Code of Federal Regulations requires that PHMSA provide interested members of the public and affected agencies an opportunity to comment on information and recordkeeping requests.

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

OMB Control No.: 2137–0572.

Annual Number of Respondents: 1,496.

Annual Number of Responses: 29,712.

Annual Burden Hours: 54,525.

Annual Burden Costs: $1,557,779.25.

PHMSA specifically requests comments on the information collection and recordkeeping burdens associated with developing, implementing, and maintaining these requirements for approval under this proposed rule.

Requests for a copy of this information collection should be directed to Deborah Boothe or T. Glenn Foster, Office of Hazardous Materials Standards (PHH–11), Pipeline and Hazardous Materials Safety Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590–0001, Telephone (202) 366–8553.

Address written comments to the Dockets Unit as identified in the **ADDRESSES** section of this rulemaking. We must receive comments regarding information collection burdens prior to the close of the comment period identified in the **DATES** section of this rulemaking. In addition, you may submit comments specifically related to the information collection burden to the PHMSA Desk Officer, Office of Management and Budget, at fax number 202–395–6974. If these proposed requirements are adopted in a final rule, PHMSA will submit the revised information collection and recordkeeping requirements to OMB for approval.

H. Environmental Assessment

The National Environmental Policy Act (NEPA), §§ 4321–4375, requires Federal Agencies to analyze regulatory actions to determine whether the action will have a significant impact on the human environment. The Council on Environmental Quality (CEQ) regulations order Federal Agencies to conduct an environmental review considering (1) the need for the action, (2) alternatives to the action, (3) environmental impacts of the action and alternatives, and (4) the agencies and persons consulted during the consideration process. 40 CFR 1508.9(b).

Purpose and Need. As discussed elsewhere in this preamble, PHMSA proposes to amend requirements in the Hazardous Materials Regulations to enhance the integrity of inner packagings or receptacles of combination packagings containing liquid hazardous material by ensuring they remain intact when subjected to the reduced pressure and other forces encountered in air transportation. In order to substantially decrease the likelihood of an unintentional hazardous materials release to the environment, the proposed amendments in this notice prescribe specific test protocols and standards for determining whether an inner packaging or receptacle is capable of meeting the pressure differential requirements specified in the regulations and aligns the HMR with international air transportation standards.

Alternatives. PHMSA considered four possible alternatives to strengthen packaging requirements for air shipments of liquid hazardous materials:

Alternative 1: Do nothing. Under this alternative, the current regulatory scheme applicable to air shipment of hazardous liquids would continue in place. We rejected this alternative because newly identified safety risks would not be addressed.

Alternative 2: Require that friction and screw type closures of inner packagings intended to contain liquids as part of a combination packaging to be secured by a secondary means of closure. Under this alternative, we would adopt the packaging amendments included in the 2011–2012 edition of the ICAO Technical Instructions. Specifically, we would require friction and screw type closures of inner packagings intended to contain liquids as part of a combination packaging to be secured by a secondary means of closure. For liquids assigned to Packing Groups II or III, a leakproof liner could be used to satisfy the secondary closure requirement where it could not be applied or would be impracticable to apply. For liquids of Packing Group I, a secondary means of closure, absorbent material and a leakproof liner would be required. We rejected Alternative 2. While it would address many of the safety issues associated with the transportation of liquid hazardous materials, Alternative 2 alone does not represent a comprehensive systems-oriented regulatory solution and would not address problems associated with the current pressure differential capability standard.

Alternative 3: Require enhanced pressure differential capability requirements on all inner packagings intended to contain liquids as part of a combination packaging. Currently, the HMR require that all packages transported by air and for which retention of liquids is a basic function must be capable of withstanding, without leakage, a certain pressure differential, which is usually 95 kilopascals (kPa) (§ 173.27[c]). This integrity standard applies to both specification and non-specification packaging. Under this alternative, we would require packaging manufacturers to conduct testing to confirm that a combination packaging intended for the air transportation of liquid hazardous materials is capable of withstanding the pressures encountered on board aircraft and to maintain a documented record of the test results. We rejected this alternative. While it would address many of the safety issues associated with the transportation of liquid hazardous materials, Alternative 3 alone does not represent a comprehensive systems-oriented regulatory solution. Moreover, it does not address critical international harmonization issues.

Alternative 4: Adopt the provisions in both Alternatives 2 and 3. Under this alternative, PHMSA would adopt the new and revised regulatory provisions summarized in the discussion of Alternatives 2 and 3 above. This is the selected alternative. The proposed testing requirements will enhance safety by ensuring that all liquid hazardous materials shipments are contained in packages capable of withstanding normal conditions encountered in air transport and packaged to reduce the possibility of damage that could lead to an incident. It also harmonizes domestic packaging requirements with international standards, thereby reducing confusion, promoting safety, and facilitating efficient transportation.

Analysis of Environmental Impacts. Hazardous materials are substances that may pose a threat to public safety or the environment during transportation because of their physical, chemical, or nuclear properties. The hazardous material regulatory system is a risk management system that is prevention-oriented and focused on identifying a safety hazard and reducing the probability and quantity of a hazardous material release. Releases of hazardous materials can result in explosions or fires, while radioactive, toxic, infectious, or corrosive hazardous

materials can have short- or long-term exposure effects on humans or the environment.

The potential for environmental damage or contamination exists when packages of hazardous materials are involved in accidents or en route incidents resulting from cargo shifts, valve failures, package failures, loading, unloading, collisions, or handling problems. The release of hazardous materials can cause the loss of ecological resources and the contamination of air, aquatic environments, and soil. Contamination of soil can lead to the contamination of ground water. For the most part, the adverse environmental impacts associated with releases of most hazardous materials are short-term impacts that can be reduced or eliminated through prompt clean-up/decontamination of the accident scene.

We have reviewed the risks associated with transporting combination packages containing liquid hazardous materials by aircraft and by surface transportation to and from aircraft. The amount of liquid hazardous material contained in air-eligible combination packages to which this notice of proposed rulemaking applies is minimal and ranges anywhere from 0.5L to 220L. However, hazardous materials that pose the highest risk to humans and the environment are packaged in much smaller quantities when transported by aircraft thereby minimizing any consequences to both should a package fail and release its contents. For these reasons, we conclude there will be little or no impact to the environment if the provisions proposed in this NPRM are adopted.

Consultation and Public Comment. We invite commenters to address potential environmental impacts associated with the proposals in this NPRM.

I. Privacy Act

Anyone is able to search the electronic form for all comments received into any of our dockets by the name of the individual submitting the comments (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78) or you may visit "*http://dms.dot.gov*".

J. Regulation Identifier Number (RIN)

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

List of Subjects

49 CFR Part 171

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

49 CFR Part 173

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

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

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

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

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

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

a. Under the source "American Society for Testing and Materials," the organization's telephone number and website address are added and the material entries "ASTM D 3078, Standard Test Method for Determination of Leaks in Flexible Packaging by Bubble Emission," "ASTM D 4991, Standard Test Method for Leakage Testing of Empty Rigid Containers by Vacuum," "ASTM D 6653, Standard Test Methods for Determining the Effects of High Altitude on Packaging Systems by Vacuum Method" and "ASTM F 1140, Standard Test Methods for Internal Pressurization Failure Resistance of Unrestrained Packages for Medical Applications" are added in appropriate numerical order;

b. The new source entry "International Safe Transit Association, 1400 Abbott Road, Suite 160, East Lansing, MI 48823–1900. (517) 333–3437. *http://www.ista.org.*" is added and, the material entry "ISTA 3A, Packaged-Products for Parcel Delivery System Shipment 70 kg (150 lb) or Less" is added to the "Source and name of material" column and the reference entry "Part 173, appendix E" is added to the corresponding "49 CFR reference" column.

The additions read as follows:

§ 171.7 Reference material.

* * * * *

(b) List of informational materials not requiring incorporation by reference. * * *

Source and name of material	49 CFR reference
* * * * * * *	
American Society for Testing and Materials, 100 Bar Harbor Drive, West Conshohocken, PA 19428. Noncurrent ASTM Standards are available from: Engineering Societies Library, 354 East 47th Street, New York, NY 10017. Telephone: (610) 832–9585. Web site: *http://www.astm.org.*	
ASTM D 3078 "Standard Test Method for Determination of Leaks in Flexible Packaging by Bubble Emission"	Part 173, appendix E.
ASTM D 4991 Standard Test Method for Leakage Testing of Empty Rigid Containers by Vacuum	Part 173, appendix E.
ASTM D 6653 Standard Test Methods for Determining the Effects of High Altitude on Packaging Systems by Vacuum Method.	Part 173, appendix E.
* * * * * * *	
ASTM F 1140 Standard Test Methods for Internal Pressurization Failure Resistance of Unrestrained Packages for Medical Applications.	Part 173, appendix E.
* * * * * * *	
International Safe Transit Association, 1400 Abbott Road Suite 160, East Lansing, MI 48823–1900. Telephone: (517) 333–3437. Web site: *http://www.ista.org.*	

Source and name of material	49 CFR reference
ISTA 3A, Packaged-Products for Parcel Delivery System Shipment 70 kg (150 lb) or Less	Part 173, appendix E.
* * * * * * *	

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

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

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

4. In § 173.27, paragraphs (a), (c)(2), (d) and (e) are revised to read as follows:

§ 173.27 General requirements for transportation by aircraft.

(a) The requirements of this section are in addition to requirements prescribed elsewhere under this part and apply to packages offered or intended for transportation aboard aircraft.

* * * * *

(c) * * *

(2) Any packaging design not already subject to § 178.605, for which the retention of liquid is a basic function (*e.g.,* the inner packagings of a combination packaging), must be capable of withstanding without leakage the greater of—

(i) An internal pressure that produces a gauge pressure of not less 75 kPa (11 psig) for liquids in Packing Group III of Class 3 or Division 6.1; or 95 kPa (14 psig) for other liquids in accordance with an appropriate test method that produces the required pressure differential between the inside and outside of an applicable packaging; or

(ii) A pressure related to the vapor pressure of the liquid to be conveyed, determined by one of the following:

(A) The total gauge pressure measured in the receptacle (i.e., the vapor pressure of the material and the partial pressure of air or other inert gases, less 100 kPa (15 psia)) at 55 °C (131 °F), multiplied by a safety factor of 1.5; determined on the basis of a filling temperature of 15 °C (59 °F) and a degree of filling such that the receptacle is not completely full at a temperature of 55 °C (131 °F) or less;

(B) 1.75 times the vapor pressure at 50 °C (122 °F) less 100 kPa (15 psia); or

(C) 1.5 times the vapor pressure at 55 °C (131 °F) less 100 kPa (15 psia).

(iii) The capability of a packaging to withstand an internal pressure without leakage that produces the specified pressure differential must be determined by successfully testing design samples or prototypes. The appropriate test method and test duration selected must be based on packaging type (*e.g.,* material of construction) in accordance with paragraph (a) of Appendix E to this part. Examples of acceptable test methods to determine pressure differential capability are identified in Appendix E to this part. For a liquid hazardous material where the vapor pressure is unknown, the initial boiling point may be used to determine minimum packaging requirements as specified in the Appendix E Table of this part. For one or more liquid hazardous materials contained in a mixture or solution, the individual constituent with the highest vapor pressure at 50 °C or the lowest initial boiling point (at sea level) may be used to determine minimum packaging requirements for the entire mixture or solution as specified in this section.

(iv) Testing must be verifiable and appropriately documented. Supporting documentation must be made available for inspection by a representative of the Department upon request and for at least 90 days once the package is offered for transportation.

* * * * *

(d) *Closures.* The body and closure of any packaging must be constructed so as to be able to adequately resist the effects of temperature and vibration occurring in conditions normally incident to air transportation. Inner packaging or receptacle closures must be held securely, tightly and effectively in place by secondary means. Examples of such methods include: Adhesive tape, friction sleeves, welding or soldering, positive locking wires, locking rings, induction heat seals, and child-resistant closures. The closure device must be so designed that it is unlikely that it can be incorrectly or incompletely closed. For other than liquids of Packing Group I, when a secondary means of closure cannot be applied or is impracticable to apply to an inner packaging containing liquids, this requirement may be satisfied by securely closing the inner packaging and placing it in a leakproof liner before placing the inner packaging in its outer packaging. A liquid of Packing Group I with a secondary means of closure applied must be packaged and closed in accordance with paragraph (e)(1) of this section.

(e) *Absorbent materials.* Except as otherwise provided in this subchapter, liquid hazardous materials of Classes 3, 4, or 8, or Divisions 5.1 or 6.1 that are packaged and offered for transport in glass, earthenware, plastic, or metal inner packagings must be packaged using absorbent material as follows:

(1) Packing Group I liquids on passenger-carrying and cargo-carrying aircraft must be contained in an inner packaging with a secondary means of closure applied that is further packaged in a rigid leakproof liner or rigid intermediate packaging containing sufficient absorbent material to absorb the entire contents of the inner packaging before being placed in its outer package.

(2) Absorbent material must not react dangerously with the liquid (see §§ 173.24 and 173.24a.).

* * * * *

5. In part 173, appendix E is added to read as follows:

Appendix E to Part 173—Test Procedures for Packagings Intended to Meet Pressure Differential Requirements for Air Transport

(a) *Test method.* Testing for pressure differential capability may be conducted using internal hydraulic or pneumatic pressure (gauge) or external vacuum methods. External vacuum tests are not acceptable if the specified pressure differential is not achieved or maintained. The external vacuum test is also not normally suitable for: Flexible packagings; packagings filled and closed under an absolute atmospheric pressure lower than 95 kPa or an altitude greater than 1,500 feet; and packagings intended for the transport of high vapor pressure liquids (*i.e.,* vapor pressures greater than 111 kPa @ 50 °C or 130 kPa @ 55 °C). Metal packagings and composite packagings other than plastic (*e.g.,* glass, porcelain, or stoneware), including their closures, must be subjected to the test pressure for at least 5 minutes. Plastic packagings, including their closures, must be subjected to the test pressure for at least 30 minutes. The minimum test pressure is one that produces an internal pressure (gauge) of not less 75 kPa (11 psig) for liquids in Packing Group III of Class 3 or Division 6.1; or 95 kPa (14 psig) for other liquids in accordance with an appropriate test method that produces the required pressure differential between the inside and outside of an applicable packaging. The following

standards are examples of acceptable methods that may be used to determine pressure differential capabilities of a packaging design:

(i) For non-flexible (i.e., "rigid") inner packagings:

(A) ASTM D 4991, "*Standard Test Method for Leakage Testing of Empty Rigid Containers by Vacuum*."

(B) ASTM D 6653, "*Standard Test Methods for Determining the Effects of High Altitude on Packaging Systems by Vacuum Method*."

(C) International Safe Transit Association, "*ISTA 3A, Packaged-Products for Parcel Delivery System Shipment 70 kg (150 lb) or Less*."

(ii) For flexible inner packagings:

(A) ASTM D 3078, "*Standard Test Method for Determination of Leaks in Flexible Packaging by Bubble Emission*."

(B) *ASTM F 1140,* "*Standard Test Methods for Internal Pressurization Failure Resistance of Unrestrained Packages for Medical Applications*."

(iii) The hydrostatic pressure test under § 178.605 of this subchapter.

(iv) *Generic flexible test method.* This test procedure is used to evaluate a flexible bag or pouch to determine pressure differential capabilities. The test specimens and the number of samples must be chosen at random, to permit an adequate determination of representative performance. When conducting the pressure differential test to meet the requirements for air transport, a minimum of three (3) representative specimens of each flexible inner packaging must be tested. Testing must be conducted on the flexible packaging (primary receptacle or secondary packaging) to establish pressure differential capabilities. Test specimens must be prepared and tested at ambient laboratory conditions.

(A) To begin the procedure, lay flexible container on flat surface and, at one of the bottom corners, cut an access hole approximately ¼″ long across the corner. Insert a 4″ × ¼;″ plastic guide tube into the cut corner of the bag. Leave a minimum of 2″ of tubing extending from the corner of the bag. This tube is used as a guide to insert the copper tube. Seal the bag according to the manufacturer's instructions while maintaining the 2″ extension on the outside of the bag. Position the bag to guide the copper tube into the bag where the plastic tube is extending out of the flexible bag. To seal the cut end of the bag, use sponge rubber to protect the bag from the clamps. Clamp the flat area of the copper tube with quick clamps. Place the bag on a flat surface and rest for 30 minutes.

(B) After 30 minutes, slowly pressurize the sample to 2–3 psi. Hold for one minute. Continue to increase the pressure until a pressure of 95 kPa (14 psig) is reached. Once the desired pressure is reached, conduct the test and monitor for 30 minutes. Upon completion of the test, submerge the bag in water, or other appropriate means, to check for leakage. Disconnect the pressure hoses from each of the fittings and inspect each specimen carefully and note any leakage that may have occurred or damage to the specimen. Document results of test on test report for packaging design.

(b) *Table.* For a liquid where the boiling point, initial boiling point or vapor pressure is known, the following table prescribes the corresponding minimum test pressure for packagings subject to pressure differential requirements in § 173.27(c). For a mixture or solution, the individual constituent with the highest vapor pressure at 50 °C or the individual constituent with the lowest initial boiling point may be used to determine the minimum test pressure its packaging must be capable of withstanding for the mixture or solution as a whole.

(Initial) Boiling Point in °C	≥48 °C	≥45 °C	≥40 °C	≥35 °C	≥30 °C	≥25 °C	≥20 °C
Vapor Pressure @ 50 °C in kPa	≤111 °C	≤125 °C	≤150 °C	≤175 °C	≤205 °C	≤240 °C	≤300 °C
Required Minimum Test Pressure in kPa	95 kPa [1]	120 kPa	165 kPa	210 kPa	260 kPa	320 kPa	425 kPa

NOTE 1: 75 kPa (minimum) for liquids in Packing Group III of Class 3 or Division 6.1.

Issued in Washington, DC, on May 7, 2010 under authority delegated in 49 CFR part 106.

Magdy El-Sibaie,

Associate Administrator for Hazardous Materials Safety.

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