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Alternate Standards for Open-Head Fiber Drum Packaging; Proposed Rule

DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

49 CFR Parts 171 through 180

[Docket No. HM–221; Notice No. 95–11]

RIN 2137–AC62

Alternate Standards for Open-Head Fiber Drum Packaging

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

ACTION: Termination of rulemaking concerning alternate standards for open-head fiber drum packaging.

SUMMARY: As directed by Section 122 of the Hazardous Materials Transportation Authorization Act of 1994, RSPA has examined whether there are alternate standards for open-head fiber drums that provide an equal or greater level of safety as the HM–181 performance standards, for the domestic transportation of liquid hazardous materials. Because RSPA finds that there are no known alternate standards that provide an equal or greater level of safety, RSPA is closing this rulemaking without proposing alternate standards. RSPA initiated this rulemaking in an advance notice of proposed rulemaking published on October 7, 1994 [59 FR 51157], and invited the submission of further proposals and comments in a supplemental advance notice of proposed rulemaking published on January 25, 1995 [60 FR 4879].

FOR FURTHER INFORMATION CONTACT: Frazer C. Hilder, Office of the Chief Counsel, Research and Special Programs Administration, U.S. Department of Transportation, 400 Seventh Street, SW, Washington, DC 20590–0001; telephone 202–366–4400.

SUPPLEMENTARY INFORMATION:

I. Background

A. The Statute

Section 122(a) of the Hazardous Materials Transportation Authorization Act of 1994 (Pub. L. 103–311) (the ''Act'') requires DOT to initiate a rulemaking proceeding

> to determine whether the requirements of section 5103(b) of title 49, United States Code (relating to regulations for safe transportation) as they pertain to open head fiber drum packaging can be met for the domestic transportation of liquid hazardous materials (with respect to those classifications of hazardous materials transported by such drums pursuant to regulations in effect on September 30, 1991) with standards other than the performance-oriented standards adopted under docket number HM–181 contained in part 178 of title 49, Code of Federal Regulations.

If, as a result of this rulemaking proceeding, DOT determines

> that a packaging standard other than the performance-oriented packaging standards referred to in [Section 122(a)] will provide an equal or greater level of safety for the domestic transportation of liquid hazardous materials than would be provided if such performance-oriented standards were in effect, [DOT] shall issue regulations which implement such other standard and which take effect before October 1, 1996.

Section 122(b). The Act also requires that the rulemaking proceeding be completed before October 1, 1995 (Section 122(c)), but that this rulemaking and any regulations issued ''shall not apply to packaging for those hazardous materials regulated by the Department of Transportation as poisonous by inhalation * * *'' Section 122(d)(1).

B. HM–181 Performance Standards

As authorized by 49 CFR 171.14, ''non-specification'' packagings may be used until October 1, 1996, for the transportation of the following categories of liquid hazardous materials:

1. Flammable liquids with a flash point above 73°F, in packagings up to 110 gallons (55 gallons for cargo aircraft, one gallon for passenger aircraft);
2. Liquid cleaning compounds and four other liquid corrosives (coal tar dye, dye intermediate, mining reagent, and textile treating compound), in drums with a removable or ''open'' head (steel and fiber drums may not be larger than 55 gallons, and the limit for plastic drums is 6.5 gallons) for shipments by rail, highway, and water only; and
3. Hazardous wastes and hazardous substances not included in another hazard class (for materials with a vapor pressure exceeding 16 psi at 100°F, the packaging must be capable of withstanding the inside vapor pressure at 130°F without leaking).

The non-specification packagings authorized for use until October 1, 1996, need not meet the former ''DOT'' design specifications, but they must be designed, constructed and used so that there will be no identifiable release of hazardous materials to the environment under conditions normally incident to transportation and the effectiveness of the package will not be substantially reduced. 49 CFR 172.24(b); see also 49 CFR 173.24(a) (1990 ed.).

After September 30, 1996, however, fiber drums and other non-bulk packagings used for the transportation of these categories of liquid hazardous materials must meet the performance-oriented standards currently set forth in the Hazardous Materials Regulations (HMR) at 49 CFR Part 178, Subpart M. See 49 CFR 171.14(b)(6). (Non-bulk packagings are those which have a capacity up to 450 liters (119 gallons) or a net mass up to 400 kg (882 lbs.). This discussion of the HM–181 performance standards applies only to non-bulk packagings.)

For liquid hazardous materials, the tests and standard prescribed in the following sections of 49 CFR apply:

Section178.603—drop test
Section178.604—leakproofness test
Section178.605—hydrostatic pressure test
Section178.606—stacking test
Section178.608—vibration standard

These performance-oriented standards replaced DOT design specifications and were adopted in RSPA's rulemaking proceeding in Docket No. HM–181. 55 FR 52042 (Dec. 21, 1990); 56 FR 66124 (Dec. 20, 1991); 57 FR 45446 (Oct. 1, 1992). (Former DOT specifications may be found in the October 1, 1990 edition of Title 49 CFR.)

The performance standards adopted in HM–181 are based on United Nations (UN) recommendations (and sometimes referred to as ''UN standards''). They are intended to simulate the normal transportation environment and to achieve international uniformity. Under the UN standards, packagings are subjected to design qualification tests as well as periodic retesting (every year for single packagings; every two years for combination packagings). 49 CFR 178.601(d), (e). In addition, each packaging designed to contain liquids must be subjected to leakproofness testing during production and before reuse. 49 CFR 173.28(b), 178.604(b)(1).

The severity of the tests to which packagings are subjected varies according to the degree of hazard of the material to be transported. Packagings for materials with the greatest hazards (in Packing Group I) must perform at a higher level than packagings designed for less hazardous materials (in Packing Groups II and III). See 49 CFR 178.603(e), 178.604(e), 178.605(d).

A drop test is required for all hazardous materials packagings marked with the UN identification. It is intended to simulate a packaging's fall in transportation, such as a fall off a hand truck or fork lift, or simply off another packaging. The minimum height for the drop test is 0.8 meters (31.5 inches or 2.6 feet) for Packing Group III materials, but greater heights are specified for Packing Group I and II materials. 49 CFR 178.603(e). A stacking test, which is required for all hazardous materials packagings other than bags, determines whether the packagings will withstand the loads that occur when packages are stacked to a height of three

meters (approximately ten feet) on a vehicle or in a warehouse. 49 CFR 178.606(c).

Hydrostatic pressure and leakproofness tests apply only to a packaging designed to contain liquid hazardous materials. In the hydrostatic pressure test, a filled packaging is subjected to an internal pressure. This amount of pressure depends on the liquid material's vapor pressure and Packing Group; it may be as low as 20 kiloPascals (kPa) (less than three psi) for low volatility, low hazard materials, and more than 250 kPa (approximately 36 psi) for Packing Group I volatile liquids. 49 CFR 178.605(d). This test is intended to determine whether the increase in pressure that can occur with a rise in temperature will deform the packaging and cause it to leak.

A leakproofness test is performed as one of the packaging design qualification tests and also on every packaging produced. Depending on the Packing Group of the material to be transported, internal air pressure of 20 or 30 kPa (roughly 2.9 or 4.4 psi) is applied to each packaging to determine if it leaks. 49 CFR 178.604(e). In addition, all hazardous materials packagings must meet the vibration standard to assure that the normal vibration incident to transportation will not cause a packaging to fail. 49 CFR 178.608.

One of RSPA's purposes in the HM–181 rulemaking proceeding was to promote ''safety in transport through the use of better packaging.'' Advance Notice of Proposed Rulemaking, 47 FR 16268, 16289 (Apr. 15, 1982). In the preamble to the final rule, RSPA noted that, in the past, many packaging requirements had been ''based on industry standards, with economic considerations sometimes taking precedence over safety considerations, rather than on a systematic assignment of packagings based on the hazards of the materials to be packaged and the suitability of the packaging.'' 55 FR 52403. RSPA later affirmed that an objective in HM–181 was ''to improve transportation safety by upgrading package integrity for a number of materials, including hazardous substances and wastes, previously shipped in non-specification packagings.'' 56 FR 66145. (A wide variety of materials are included in the category of hazardous substances, many of which, such as polychlorinated biphenyls (PCBs), are not regulated except as environmentally hazardous materials.

C. Prior Industry Requests for Relaxation of HM–181 Standards

Following issuance of the final rule in HM–181, the Fibre Drum Technical Council (FDTC), submitted a petition for reconsideration in which it asked RSPA to continue ''the status quo for domestic shipments in non-D.O.T. specification drums'' of certain hazardous materials. In December 1991, RSPA denied FDTC's petition and stated that, because it intended to upgrade package integrity, it ''never intended to except domestically-used fiber drums from the performance standards it adopted'' in HM–181. 56 FR 66146.

In June 1992, FDTC then applied for an exemption from the HMR to allow the continued use of open-head non-specification fiber drums for rail and highway transportation within the United States of the three categories of liquid hazardous materials specified above (plus certain hazardous solids). FDTC stated that these drums would meet a series of six standards prepared for the purpose of establishing an industry specification.

To support its exemption application, FDTC asserted that, over the 1980–1991 period, these drums had a 99.99% safety record. FDTC also stated that the fiber drum industry was ''completely unable to meet the new UN/DOT specifications without incurring significant costs and investments, which would make these drums prohibitively expensive in the marketplace.'' It estimated that ''the average percentage (cost) increase related to redesigning the fibre drums to meet specifications is 50 percent'' and stated that ''the number of units to which the 50 percent increase applies represents a substantial portion of the fibre drum industry.''

RSPA's Associate Administrator for Hazardous Materials Safety denied FDTC's exemption application because he found that FDTC's proposed impact test was not equivalent to the drop tests of 3.9 and 2.6 feet, respectively, required for Packing Group II and III packagings, and that FDTC's other proposed standards did not address the pressure requirements of the leakproofness and hydrostatic pressure tests required for packagings intended for liquid hazardous materials. RSPA's Acting Administrator affirmed the denial of FDTC's application for an exemption and found that the standards proposed by FDTC would not achieve a level of safety ''at least equal to that specified in the regulation from which the exemption is sought.'' 49 CFR 107.103(b)(9)(i). In her detailed decision, the Acting Administrator discussed the HMR's prior authority for the use of non-specification fiber drums for certain materials, the adoption of the HM–181 performance standards which eliminated that prior authority, and representative incidents involving spills when a fiber drum fell over or was dropped a short distance. She also considered the 99.99% ''success rate'' for fiber drums but found that it ignored the types of incidents which occur during normal transportation, including minor accidents that justified RSPA's objective in HM–181 in upgrading packaging integrity.

FDTC's successor organization, the International Fibre Drum Institute (IFDI), states that Congress passed Section 122 of the Act because it was concerned that RSPA had not considered the safety record of open-head fiber drums when it denied FDTC's application for an exemption. According to IFDI, Congress enacted this provision ''to require DOT to take a 'fresh and fair' look at open-head fibre drum packaging to determine whether it should be used after October 1, 1996 * * *''

D. ANPRM

On October 7, 1994, RSPA published in the Federal Register an advance notice of proposed rulemaking (ANPRM), Docket No. HM–221; Notice No. 94–9 (59 FR 51157), soliciting comments and proposals for alternate standards for open-head fiber drum packaging. In the ANPRM, RSPA requested ''[d]etailed comments and proposals * * * that will assist RSPA in developing an appropriate regulatory proposal consistent with the requirement'' in Section 122 of the Act. 59 FR 51158. RSPA invited proposals, ''preferably in the form of a draft standard, that would assist RSPA in accomplishing the intended effect of this law.'' *Id*. RSPA also invited comments on whether alternate standards for open head fiber drums should be limited to domestic transportation of liquid hazardous materials.

In response to the ANPRM, RSPA received comments from 17 parties. In addition, RSPA's Administrator and other DOT officials held separate meetings concerning this rulemaking with: (1) IFDI's counsel and officials of Sonoco Products Company (a member of IFDI), and (2) representatives of the Association of Container Reconditioners (ACR), the 3M Corporation, USX Corporation, and the Steel Shipping Container Institute (SSCI). Notes of these two meetings have been placed in the public docket for this rulemaking.

Only IFDI proposed alternate standards for open-head fiber drum

packaging for the transportation of liquid hazardous materials. The set of six standards it has offered appear to be identical to the standards proposed by FDTC in its 1992 exemption application and, according to IFDI, ''accurately predict, and will continue to accurately predict, the safety of liquid hazardous materials as transported in open-head fibre drums.'' IFDI referred to ''a 30-year record of safe shipping experience,'' and a safety record that ''has continued to remain at 99.99 percent for the past 14-year period.'' It asserted that the ANPRM was deficient for failing to specify factors that, according to IFDI,

> Congress directed DOT to consider. These factors are set forth in the legislative history and include: (1) DOT's Hazardous Incident Reporting System as it pertains to fibre drums; (2) the fibre drum industry's own safety record; (3) the 30 years of shipping experience associated with use of these drums and (4) existing industry standards that have led to the industry's ''excellent shipping record.''

IFDI also contended that other matters were ''irrelevant'' to this rulemaking, including the safety record for other packagings (similar to that for fiber drums), the comparative costs of other packagings, and possible impacts that alternate standards would have on international trade agreements.

Several commenters expressed opposition to alternate standards for fiber drums. The 3M Corporation stated: ''The UN performance standards are very basic standards that simulate the transportation environment. There are no other standards that simulate the current transportation environment.'' DuPont acknowledged that it used a ''small amount'' of fiber drums for shipping non-hazardous liquids, but that its evaluations have led it to follow a ''long-standing practice'' of not using fiber drums for hazardous liquids. Elf Atochem stated that ''liquid-type fiber drums could not offer the filler, carrier and emptier an 'equal or greater level of safety' to a drum which does pass the required [HM–181] tests.''

SSCI argued that alternate standards would move the United States away from an international system of hazardous materials regulations, forcing some shippers to stock different packagings for domestic and international shipments, and compromise transportation safety by authorizing lower quality packagings. ACR stated that alternate packagings should be approved only under the provisions of 49 CFR 178.601(h), which authorizes RSPA's Associate Administrator for Hazardous Materials Safety to approve packagings which are ''shown to be equally effective, and testing methods must be equivalent.''

Monsanto Company supported the position that fiber drums should conform to the HM–181 performance standards, but it suggested a limited exception to allow the use of non-standard fiber drums for the shipment of liquid hazardous wastes in packing groups II and III to incineration facilities, under certain conditions. Monsanto stated that it would not be acceptable ''to allow for any other use of fiber drums which do not meet the requirements of performance standards.''

Besides opposing the issuance of alternate standards, Russell-Stanley and The Society of the Plastics Institute also stated that if any alternate standards were adopted, they should apply to all open-head drums, including those made from steel and plastic as well as fiber. According to Sirco Systems, Inc., alternate standards would be ''a precedent for similar requests by other packaging industries [which] could undermine the entire performance-oriented packaging standards system * * *''

E. SANPRM

On January 25, 1995, RSPA published in the Federal Register a supplemental advance notice of proposed rulemaking (SANPRM), Docket No. HM–221; Notice No. 95–2 (60 FR 4879). In the SANPRM, RSPA reopened the comment period and scheduled a public hearing to allow interested parties to submit additional proposals as well as comments with regard to the alternate standards offered by IFDI.

The SANPRM broadly encouraged interested parties to ''submit any comments relevant to the direction in Section 122 of the Act.'' 60 FR 4880. Additional comments were invited on whether the alternate standards proposed by IFDI meet the statutory measure, in light of the prior determination by RSPA (on FDTC's application for an exemption) that similar standards did not provide an equal or greater level of safety than the HM–181 performance standards. RSPA also requested comments on the ''factors set forth in the legislative history'' of Section 122, as represented by IFDI; whether alternate standards, if adopted, should apply to packagings other than fiber drums; and Monsanto's proposal for a limited exception to allow non-standard fiber drums to be used for shipping hazardous wastes to incineration facilities.

At a public hearing on February 17, 1995, statements were presented by IFDI, three manufacturers of fiber drums, two shippers of hazardous materials in fiber drums, ACR and SSCI. RSPA also received 13 additional written comments, including five from members of Congress: Sens. Hollings (D-SC) and Thurmond (R-SC) and Reps. Baker (R-CA), Gillmor (R-OH), and Spratt (D-SC). All the statements and comments to the ANPRM and the SANPRM have been carefully considered as discussed below.

II. IFDI's Proposed Alternate Standards

FDTC's June 1992 exemption application and IFDI's comments in this proceeding both state that open-head fiber drums presently being manufactured meet the stacking test set forth in 49 CFR 178.606 and the vibration standard set forth in 49 CFR 178.608. As alternatives to the other three HM–181 performance standards (drop, leakproofness, and hydrostatic pressure tests),

> IFDI has proposed a set of six standards entitled as follows:
>
> IFDI Standard 101, Rev. 1—Compatibility Test
> IFDI Standard 110, Rev. 1—Joint Integrity Test
> IFDI Standard 120, Rev. 1—Leakage Spray Test
> IFDI Standard 130, Rev. 1—Weatherproofing Test
> IFDI Standard 140, Rev. 1—Fibre Drum Structure
> IFDI Standard 150, Rev. 1—Impact Test

IFDI's standard for fiber drum structure (No. 140) specifies the manner and materials for construction of fiber drums, rather than a test of how the drums will perform. It sets forth specifications for the drum heads, joint materials (caulking and gaskets) and sidewall (paperboard caliper, burst strength, and adhesive). This standard requires that the drum manufacturer know the expected use for the drum, as it specifies non-water soluble adhesive only for drums ''intended for outdoor or high humidity storage.'' It also states that a polyethylene, polymer or poly/foil liner, laminated to the paperboard, ''may be used as the interior ply to provide liquid-holding capability and/or improved product protection and drum cleanliness properties.''

IFDI's other five standards represent forms of performance standards; according to IFDI, four of them set forth tests to which samples are subjected during the design phase (before regular production begins), and the fifth (leakage spray, No. 120) is ''a production run test on each container.'' In summary, these five standards consist of:

- Compatibility (No. 101)—The test consists of folding and stapling a 6″

square of the drum's lining material into a five-sided cube (or ''boat'') and exposing the bottom creases under the surface level of a sample of the liquid hazardous material in a closed 8 oz. jar which is then elevated in temperature for ''any appropriate set of time and temperature conditions'' (for example, 130 °F for 30 days). Other ''product contact'' materials (such as caulking and gaskets) may also be placed in the jar. Success is indicated when there is no stress cracking of the lining material. IFDI indicates that this test is performed for each different liquid hazardous material for which the drum is to be used.

• Joint Integrity (No. 110)—The test consists of filling a drum with water containing a ''wetting agent'' (such as ''a squirt of dish detergent'') and subjecting the drum to the one-hour vibration test specified in 49 CFR 178.608. Success is based on the absence of any ''observable staining of the interior and exterior of the drum in the vicinity of the bottom chime.'' However, IFDI also states that the drum is closed and, accordingly, this test establishes the integrity of both top and bottom joints, including the gasket used in the closure.

• Leakage Spray (No. 120)—The test consists of spraying ''[a]ll interior seams and joints of the (plastic lined) surface of each drum * * * with denatured alcohol or its equivalent in such a way that the target drum areas are wetted.'' The drum passes the test if no stains are observed on the interior surface that would indicate that the paperboard has been wetted through the plastic lining.

• Weatherproofing (No. 130)—This test is applied only to drums intended for outdoor or high humidity storage and consists of subjecting random samples to a 72-hour shower of water at the rate of one inch per hour. The drum passes the test if it loses no more than 15% of its compression strength and is still capable of passing the stacking test in 49 CFR 178.606.

• Impact (No. 150)—After conditioning at specified temperature and humidity for 48 hours, the drum is filled to its net capacity with water and subjected to two tests. It is first tipped over on concrete onto its cover chime. The same drum must then withstand a diagonal drop on the bottom chime ''sufficient to provide at least 500 foot-pounds impact,'' except that the minimum drop height is one foot and the maximum is two feet. This means that a 55-gallon fiber drum designed to contain a liquid with the specific gravity of water (8.3 lbs. per gallon) would be tested from a height of approximately 13 inches. A drum passes the test if there is no leakage.

According to IFDI, ''[t]he impact test cannot be evaluated by itself,'' but three standards in combination (structure, joint integrity, and impact) account for the ''outstanding record'' of fiber drums and should be compared to DOT's drop test. IFDI also states that the leakage spray test is the industry's version of DOT's leakproofness test, although no pressure is applied ''because of the nature of the materials of construction.'' Nonetheless, IFDI states that this is an ''exceedingly sensitive'' test and ''will reliably detect the smallest leaks.'' IFDI further comments that the liquid hazardous materials for which fiber drums have been authorized have low vapor pressures, for which the hydrostatic pressure in 49 CFR 178.605 is not necessary. IFDI indicates it will not object if RSPA issues alternate standards limited to liquids with a vapor pressure (Reid Test) not to exceed 16 psia at 100 °F.

IFDI implies that its standards have been in use in the fiber drum industry since 1973, when the liquid materials shipped in fiber drums were first regulated under the HMR. IFDI has claimed a safety record for fiber drums of 99.99% since 1980, based on its review of industry records and DOT's Hazardous Materials Incident Reporting System (HMIS) (and a comparable record before that time). It states that the lack of customer complaints and commercial claims confirms that fiber drums are dependable and safe. Three members of IFDI and two users of fiber drums echo these contentions: Astro Fibre Drum Inc., General Cooperage Co., Sonoco Products Co., Neste Polyester Inc., and Sybron Chemicals Inc.

General Cooperage indicates that 40 million fiber drums of all types are produced each year; between 1980 and 1991, a total of more than 13 million were built for shipping solid and liquid hazardous materials and, during that time, DOT received only 1,487 incident reports ''indicating a failure of some type with fibre drums of all kinds.'' (In its 1992 exemption application, FDTC stated that only 455 of these incidents involved liquid hazardous materials for which non-specification fiber drums were authorized.) According to General Cooperage, the HMIS ''indicates that only 72 failures occurred between January 1992 and October 1994 from a total of two million drums built for liquid hazardous materials.'' Astro and Sonoco also refer to the fiber drum industry's ''99.99 percent safety record.''

Neste states that, for each of the past seven years, it has shipped approximately 10,000 fiber drums containing its gelcoat product, a polyester resin, without any reported incidents of spillage or other problems in shipping and handling. It indicates it has not had the same success with steel drums, which it previously used. Sybron testifies that it has not had any ''safety-related problems'' during more than 20 years of shipping various materials, including corrosives and combustibles, in open-head fiber drums. It states its customers prefer fiber drums to other packagings, such as steel and plastic drums, and that fiber drums offer ''definite advantages'' over these other packagings.

IFDI and Sonoco both assert:

> The yardstick by which any alternate standards should be measured or evaluated in determining whether the standards provide an equal or greater level of safety for transport is whether the standards predict safety in the transport—not whether the alternate standards are identical to the UN or HM–181 standards.

These parties further contend that IFDI's proposed alternate standards ''should be evaluated as a whole in terms of their ability to predict safety'' in transportation of hazardous materials, and ''not on an individualized basis.''

ACR and SSCI specifically challenge IFDI's proposed standards. ACR repeats an earlier characterization of IFDI's alternate standards as ''similar to but less stringent than those adopted by DOT under HM–181.'' SSCI states that the HM–181 performance standards are ''minimum standards based on real world experience and conditions,'' but that IFDI's proposed standards ''do not adequately reflect a 'real world' transportation environment.'' ACR contends that the fiber drum industry's arguments come down to: (1) Non-specification open-head fiber drums have a good record of safety in transportation, and (2) these fiber drums have been constructed to industry standards which, based on shipping experience, appear to work well in practice even though the industry standards are not as stringent as the HM–181 performance standards. In this context, however, SSCI states that the IFDI standards ''were first adopted in May 1992,'' both questioning the procedures under which these standards were adopted and implying that the prior shipping experience has little relevance.

ACR points out that IFDI's compatibility test (Standard 101) may be run ''under any appropriate set of time and temperature conditions,'' which ''does not meet the rigors of good packaging testing methodology, makes nearly impossible meaningful comparisons of test data, and eliminates the possibility of repeating the tests for purposes of enforcement.'' According to

SSCI, IFDI acknowledged at the February 17, 1995 public hearing that the compatibility test was not routinely performed. SSCI also takes the position that the compatibility requirement in 49 CFR 173.24(e) ''renders this test moot.''

Both ACR and SSCI contend that, because IFDI's leakage spray test (Standard 120) does not require pressure inside the fiber drum, it is not equivalent to DOT's leakproofness test. ACR states that the leakage spray test would not be adequate if the vapor pressure of liquid materials ''exceeds that of the previously authorized materials.'' SSCI asserts that this is a problem also with IFDI's joint integrity test (Standard 110) if liquids have ''elevated vapor pressures in the normal range of temperatures experienced during transport.''

SSCI describes IFDI's impact test (Standard 150) as a ''pale substitute'' for DOT's drop test and ''substantially inadequate to simulate the full range of transporting experiences.'' It notes that IFDI's impact test does not require dropping a fiber drum more than two feet, which is some 30% less than the 0.8 meters required for packagings certified for Packing Group III materials. SSCI's comments include a memorandum by a professor in the Virginia Tech Department of Mechanical Engineering, who indicates that ''energy that must be dissipated at impact is proportional to the drop height (so that) a drum dropped from a height of 2.7 ft. would have to absorb 2.7 times the energy resulting from an impact from a 1 ft. height.'' This professor states that steel would ''dissipate about 3.5 times the energy in plastic deformation'' as compared to fiberglass epoxy, which he assumes to have similar properties to a fiber drum. He concludes that

> a valid drop test for drums of different materials must be performed at the same drop height. Drums that are dropped during handling are going to be dropped from the same height regardless of the material that the drum is made of. Therefore, the height that container industry determines by consensus to be representative of mishandling in the field should apply to all container materials. To request a different height for different materials is to ignore how containers are handled in the field.

Shell Chemical Company believes that IFDI has not demonstrated that fiber drum packaging provides a level of safety equivalent to the HM–181 standards for the transportation of liquid hazardous materials. DuPont also urges DOT not to accept ''a standard for the United States that is less than the international standard.''

III. Other Industry Standards for Non-hazardous Materials

At the February 17, 1995 public hearing, IFDI noted that there are numerous ''methods used to evaluate packaging other than the UN performance standards,'' including the Uniform Freight Classification (UFC), the National Motor Freight Classification (NMFC), and the National Safe Transit Packaging systems. According to IFDI, these systems were developed to evaluate a packaging's ability ''to retain its contents so that the packaging will be delivered intact; that there will be no loss of contents.'' SSCI also stated that the ''American performance standards for shipping containers (including the drop, compression, permeability and vibration tests) were first developed by the American Society of Testing and Materials (ASTM) in the 1940's.'' All of these other systems apply to general freight. Both UFC and NMFC explicitly state that hazardous materials must be tendered in accordance with DOT's regulations, *i.e.*, the HMR. UFC Rule 39; NMFC Item 540. ASTM Standard Practice for Performance Testing of Shipping Containers and Systems (D 4169) states that the ''suitability of this practice for use with hazardous materials has not been determined.''

As IFDI testified, the UFC and NMFC systems generally use a combination of ''both design and performance systems.'' This is similar to the former DOT 21C specification for fiber drums, which set forth the minimum thickness and strength for the top, bottom, and sidewall of the fiber drum and also included a compression test and a series of four drops from four feet in different orientations (top chime, bottom chime, sidewall and closure). See 49 CFR 178.224 (1990 ed.). The UFC and NMFC standards applicable to fiber drums for liquids set forth several different options. All but one of these options include construction standards, capacities and weight limits as well as the following similar to IFDI's impact test:

> Drums filled to net capacity with water must withstand without leakage a tipover fall on concrete on the cover chime followed by a diagonal drop on the bottom chime sufficient to provide at least 500 foot-pounds impact, except that a maximum height of drop shall not exceed two feet and the minimum height of drop not less than one foot.

The last option in the UFC and NMFC systems allows the use of a fiber drum that passes a four-foot drop test from two different orientations, without regard to construction specifications. In this respect, the UFC and NMFC systems resemble the HM–181 performance standards.

The ASTM D 4169 standard provides for a single test sample to be subjected to a series of tests, such as climate hazards, handling, vehicle stacking, and vibration (loose-load and stacked). The specific tests performed and their order are determined by the shipper's intended ''distribution cycle'' as to how the package will be shipped, the ''acceptance criteria'' (whether the package is damage-free or merely intact), and the desired ''assurance level.'' The last is ''based on the product value, the desired level of anticipated damage that can be tolerated, the number of units to be shipped, knowledge of the shipping environment, or other criteria.'' Within ''handling'' is a drop test that also depends on the type and shipping weight of the package. Among the test methods referred to in ASTM D 4169 is the Standard Test Method for Drop Test for Loaded Cylindrical Containers (D 997), applicable to barrels, drums and kegs of all construction materials. The procedure for drop tests states that the height from which the drum is dropped ''will depend upon the purpose of the test, but normally will be 4 ft (1.2 m).'' Otherwise, ASTM D 4169 generally prescribes lower drop heights for ''large and heavy shipping units and unitized loads to withstand mechanical handling hazards,'' up to one foot; as applied to drums, these standards appear to contemplate that the drums are secured to a pallet for handling.

Procedures of the International Safe Transit Association (formerly the National Safe Transit Association) for testing packaged products weighing over 100 lbs. (Project No. 1) consist of a vibration test followed by an incline-impact test. For the latter, the package slides down an inclined plane and strikes a vertical surface at a specified velocity. However, this standard appears to be designed only for materials packaged in boxes, and it is not applicable to drums.

IV. Finding on Alternate Standards

Packagings manufactured to IFDI's proposed standards will not meet the drop, leakproofness and hydrostatic tests adopted in HM–181. No pressure is applied in IFDI's leakage spray test. And IFDI's impact test does not measure the ability of a fiber drum to survive a fall on its bottom chime from the minimum 2.6 feet height specified in the HM–181 drop test. The other industry standards discussed above also do not assure that packagings will perform to the same level as packagings that meet the HM–

181 performance standards (other than perhaps the option in the UFC and NMFC systems that includes a four-foot drop test).

As directed by Section 122 of the Act, RSPA must determine whether any of these alternate standards will provide a ''level of safety'' equal or greater than that provided when packagings meet the HM–181 performance standards. RSPA believes that any specified ''level of safety'' in the transportation of hazardous materials can only be measured with reference to the performance of the packaging used to transport those hazardous materials. If the packaging fails, safety is compromised. The ultimate purpose of any packaging standards must be, as IFDI puts it, their ability ''to predict the safety of [the packaging] in the transportation environment.'' In other words, how will the packaging perform, and to what extent will it protect its contents during transportation? To make the finding required by Section 122 of the Act, RSPA must determine whether a packaging that meets other standards will perform as well in the normal transportation environment as a packaging that meets the HM–181 performance standards.

The flaw in IFDI's proposed alternate standards is that they contain no means of assuring the same performance that the HM–181 standards measure. IFDI's impact test, a tipover followed by a one- to two-foot drop on the bottom chime, is essentially a lesser form of the 2.6-foot drop test in 49 CFR 178.603. IFDI states that its structure, joint integrity and impact tests, in combination, must be compared to DOT's drop test. But RSPA cannot find anything in the first two that compensates for the inability of IFDI's 55-gallon fiber drum to survive a drop of more than 13 inches. RSPA recognizes the historical use of construction specifications, alone or with performance tests, in IFDI's proposed standards and in the former DOT specifications. However, the only purpose of construction standards is to assure satisfactory performance. A fiber drum manufactured to the IFDI standards cannot perform as well, or achieve the same level of safety as, a drum meeting the HM–181 standard of a drop from 2.6 feet or more.

Similarly, since liquids expand in hot weather, a packaging that will not withstand an increase in pressure is simply not as safe as one that will. While IFDI has stated that it would not object if RSPA limited the use of non-specification fiber drums to liquids with a vapor pressure no greater than 16 psi, RSPA has no basis (from IFDI's submission or otherwise) to find that this limitation is sufficient to avoid those instances when an increase in internal pressure would affect the performance of a drum.

Safety and the ability of a packaging to contain its contents can be increased by certain handling practices that minimize damage to individual packagings. For example, banding or wrapping individual packagings secured to a pallet will reduce the likelihood of one packaging falling over or off another. Restricting the height that packagings are stacked will reduce the distance a single package can fall off another. The familiarity and expertise of a private or contract carrier, that handles only a few hazardous materials, reduces risks associated with a common carrier that transports any freight offered to it. Many exemptions issued by RSPA include operational controls along these lines. Some of these controls are found in Monsanto's proposal for a limited exception to allow the use of non-standard fiber drums for the shipment of liquid hazardous wastes in packing groups II and III to incineration facilities.

Monsanto's proposal would apply to the situation when the entire package (with its contents) was to be incinerated, and would allow the one-time use of drums similar in design to former DOT specifications 21C and 21P, under conditions similar to those set forth in 49 CFR 173.12(c) (authorizing the reuse of standard packagings for shipments of hazardous waste, by highway only, when the packaging is finally closed at least 24 hours in advance of transportation, inspected for leaks, and loaded by the shipper and unloaded by the consignee—or handled only by private or contract carrier). Monsanto would also limit to 90 days the total time the non-standard fiber drum could contain the liquid hazardous waste.

The only party to comment on Monsanto's proposal, the Association of Waste Hazardous Materials Transporters (AWHMT) raised several questions. AWHMT expressed concerns that the liquid hazardous waste would cause the fiber drums to deteriorate during a 24-hour holding period. It also noted that drums are typically double stacked (one on another) during transportation and asked whether double stacking would ''compromise the integrity of fiber-drum packagings containing liquids.'' For AWHMT, the packaging material and pre-trip requirements were not important, but

> all packaging should meet the same level of transportation performance * * * based on safety, not the use proposed for the packaging after transportation * * * In short, transporters should not have to assume increased risk for the convenience of a shipper or consignee.

Monsanto's suggestion appears to exclude fiber drums built to IFDI's proposed standard, because the drums Monsanto would use would meet former DOT specifications 21C (which includes a four-foot drop test) or 21P (which mandates the tests applicable to the inside plastic container). 49 CFR 178–224–2(b), 178–225–5(b) (1990 ed.). In this circumstance, and without further comments on Monsanto's proposal in response to the ANPRM, there is insufficient information on which to propose a rule concerning the use of fiber drums for the shipment of liquid hazardous wastes to incineration facilities.

IFDI, any of its member companies or any other person that wants to use non-specification fiber drums for this or any other purpose may petition RSPA for a rulemaking, in accordance with 49 CFR 106.31, or apply for an exemption and provide the information specified in 49 CFR 107.103.

RSPA assumes that there are an infinite number of possible alternate standards that could be measured against the level of safety provided by the HM–181 performance standards. However, the final determination of whether any standard provides an equal or greater level of safety as the HM–181 standards must rest on whether it produces a packaging that will perform as well in the normal transportation environment as one that meets the HM–181 standards. Because IFDI's proposed standards do not assure this same performance, they will not provide as great a level of safety for the transportation of liquid hazardous materials as the HM–181 standards. In light of that finding, Section 122 does not require RSPA to propose any amendments or additions to the HMR.

V. Congressional Concerns and Other Matters

IFDI points to language in the Congressional Record, and letters from Senators and Representatives to the docket, urging RSPA to consider the fiber drum industry's ''excellent shipping record.'' These letters also question whether the scope of this rulemaking is consistent with Section 122 of the Act.

Sen. Hollings states that RSPA should not consider whether alternate standards should apply to other packagings in this rulemaking. Both he and Sen. Thurmond believe that RSPA's request for estimates of cost differences between present and proposed packagings ''goes beyond the statutory mandate.'' As Sen. Thurmond states,

''the Act directed DOT to consider only one issue—safety.'' Sen. Thurmond and Reps. Gillmor, Spratt and Baker all advised RSPA to consider the factors mentioned in IFDI's comments to the ANPRM (on which RSPA invited comments in the ANPRM). Sen. Hollings and Rep. Gillmor questioned whether RSPA had prejudged the issues in this rulemaking, and Rep. Spratt stated that the standard of an equal or greater level of safety ''is specifically not a standard of equivalence to the performance tests of HM–181.''

The Supreme Court has made clear that the ''starting point in determining the scope'' of legislation ''is, of course, the statutory language.'' *North Haven Bd. of Educ.* v. *Bell,* 456 U.S. 512, 520 (1982). Resort to legislative history, or the asserted intentions of a statute's sponsors, is unnecessary when the language of the statute is unambiguous. *Freytag* v. *Commissioner,* 501 U.S. 868, 873 (1991) (''When we find the terms of a statute unambiguous, judicial inquiry should be complete except in rare and exceptional circumstances.''); *United States* v. *Ron Pair Enterprises, Inc.,* 489 U.S. 235, 241 (1989) (where ''the statute's language is plain,'' the only task is to enforce the law according to its terms).

In this case, the Act's command is clear: DOT must determine whether alternate standards will provide ''an equal or greater level of safety'' than the HM–181 performance standards. The level of safety to be provided by alternate standards is the sole basis of RSPA's finding in Part IV, above, consistent with Section 122 of the Act. Historical shipping experience under lesser standards, in effect prior to the adoption of the performance standards in HM–181, cannot be dispositive.

As a matter of fact, the actual experience of shipping hazardous materials in fiber drums was considered in RSPA's detailed decision on FDTC's appeal from the denial of its application for an exemption. There RSPA's Acting Administrator found that the claimed 99.99% ''success rate'' for fiber drums was comparable for all packagings but, notwithstanding that record, it was appropriate to further improve safety in HM–181 by eliminating non-specification packagings of all constructions (metal and plastic, as well as fiber). Were RSPA to have accepted the fiber drum industry's position that the past shipping record was satisfactory, that success rate ''would foreclose RSPA from taking any further actions to require appropriate levels of safety for the transportation of hazardous materials.'' Moreover, the types of incidents involving fiber drums were considered to be more reflective of a packaging's performance, and the need to upgrade the packaging, than just the number of incidents.

Also beyond the direction of Section 122 of the Act is IFDI's claim that the HM–181 standards are too strict and need to be relaxed for fiber drums. Under Section 122, the benchmark for alternate standards is HM–181, not some less protective version thereof. Moreover, contentions regarding the impossibility of making fiber drums to meet the HM–181 performance standards and arguments concerning other exceptions from the HM–181 requirements were discussed in detail in the decision on FDTC's appeal from a denial of its application for an exemption.

The only additional matter raised in IFDI's comments in this proceeding relates to an approval recently issued by RSPA that permits the remarking of steel drums, as meeting the HM–181 standards without additional testing, that were certified to meet the former DOT specifications at dates up to September 30, 1994. (Packagings may not be made to the former DOT specifications after September 30, 1994. 49 CFR 171.14(b)(5)(ii).) Those former DOT specifications included a series of tests in which sample drums were required to be tested at pressures of 15 psi or more (some up to 80 psi) and dropped from a height of at least four feet, in various orientations (e.g., diagonally on the chime and on any other part ''considered weaker than the chime,'' 49 CFR 178.116–12(a)(1990 ed.)). Moreover, a remanufacturer who remarks a steel drum, under the authority of this approval, certifies that the drum is capable of meeting the HM–181 performance standards.

In contrast, IFDI would continue the authority to transport liquid hazardous materials in fiber drums that cannot pass a drop test greater than two feet (or 13 inches for the standard 55-gallon drum) or a hydrostatic pressure test at 3 psi. Nothing in RSPA's approval for remarking steel drums can justify the continued use of fiber drums that do not meet either the former DOT specifications or the HM–181 performance standards.

Section 122 of the Act requires RSPA to determine whether alternate standards for fiber drums provide ''an equal or greater level of safety'' as the HM–181 performance standards. As already discussed, a standard that requires only a one- to two-foot drop test does not provide an equal level of safety as a standard that requires being able to withstand a drop of 2.6 feet. The separate question raised by IFDI, whether certain steel drums actually meet the former DOT specification, is beside the point and concerns enforcement of the applicable standards rather than the appropriate standard to be applied.

VI. Final Agency Action

This rulemaking proceeding is terminated, and this decision constitutes RSPA's final agency action.

Issued at Washington, DC on September 21, 1995, under authority delegated in 49 CFR Part 1.

D.K. Sharma,

Administrator.

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