
DEPARTMENT OF TRANSPORTATION
**Research and Special Programs
Administration**
49 CFR Parts 172, 173 and 175

[Docket No. HM-166Q; and HM-166F; Amdt. Nos. 172-83, 173-167, 175-28]

**Exceptions for Small Quantities of
Hazardous Materials; and Limited
Quantities of Radioactive Materials**

AGENCY: Materials Transportation Bureau (MTB), Research and Special Programs Administration, DOT.

ACTION: Final rule.

SUMMARY: This document amends the Hazardous Materials Regulations (HMR) by: (1) Reducing the number of requirements that the HMR impose on the shipment and carriage of certain small quantities of hazardous materials contained in high technology instruments, laboratory chemicals, medical devices, and diagnostic kits; and (2) applying revised requirements to limited quantities of radioactive materials to achieve comparable levels of safety in each mode in a fashion that is consistent with necessary regulatory controls.

The amendments in this document simplify and reduce the number of regulatory requirements placed on the carriage and shipment of small quantities of hazardous materials.

EFFECTIVE DATE: September 30, 1983. Voluntary compliance is authorized 30 days after publication in the **Federal Register**.

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SUPPLEMENTARY INFORMATION: I.

Background. These amendments are based on proposals made in Notice No. 10 (82-10) Docket HM-166Q and HM-166F (47 FR 51430, November 15, 1982), and Notice No. 81-8, Docket HM-166F (46 FR 61908, December 12, 1981). This consolidation of the separately issued notices into a single final rule is considered desirable since each of the proposals is affected by the other. A discussion of each notice and the comments received in response thereto follows.

A. Notice No. 81-8, Limited Quantities of Radioactive Materials. In this notice, MTB proposed adoption of certain rules applicable to the transportation of

limited quantity radioactive materials and radioactive devices. That notice proposed changes to eliminate certain regulatory inconsistencies which have existed between shipments transported by aircraft and those transported by the surface modes ever since the HMR were consolidated in 1976. These amendments to the HMR are based on the relatively low hazards associated with limited quantity radioactive materials and radioactive devices when compared with other hazardous materials and implement requirements which will provide an adequate level of safety in transportation.

1. *General.* Response to this Notice of Proposed Rulemaking (NPRM) was received from twenty commenters, of which shippers of radioactive materials in limited quantities and radioactive devices comprised a majority. Comments were received from one carrier (United Parcel Service) and two carrier associations (Air Transport Association and Radiopharmaceutical Shippers and Carriers Conference) having particular interests in the proposed rule because of its potential impact. In addition, comments were received from the University of Chicago, the University of Rochester Medical Center, and the Society of Nuclear Medicine—a specialty medical society of physicians, medical scientists, and technologists engaged in the practice of nuclear medicine. Nearly half the comments received fully support the

rules as proposed. While no commenters took exception to the basic objectives established in the NPRM, there are several areas in which a consensus on how best to achieve the desired results was not reached. A brief discussion of specific comments follows.

2. *Regulations for transportation by aircraft.* The Air Transport Association (ATA) took exception to MTB's proposal in that ATA believes the proposed requirements would be inconsistent with the International Civil Aviation Organization's (ICAO) "Technical Instructions for the Safe Transport of Dangerous Goods by Air". Specifically, ATA feels that if these materials are hazardous, they should be fully regulated and the pilot notified of their presence. If the materials are not hazardous, then ATA feels they should not be regulated. The basic requirements for these materials are identical in the two sets of regulations. MTB recognizes that the DOT rules provide options not allowed by ICAO at this time, but MTB is hopeful that a similar rule might be adopted by ICAO in the future.

3. *Quasi shipping papers.* Although the proposal to eliminate the detailed hazardous materials shipping paper and certification requirements received strong support from most commenters, some objections were raised regarding the new requirement for communicating the presence of radioactive materials in limited quantities. The objections center on logistics relative to the notice which commenters predict will arise as shippers and carriers seek to comply with the revised rules rather than any possible increase of risks in transportation.

Mallinckrodt, Inc., contends that a provision which permits the notice to be enclosed in the package is such that, for a carrier to be satisfied that the shipment does comply, it will necessitate opening the package. Another commenter, Beckman Instruments, Inc., believes that the presence of such a notice will in many cases result in a refusal, particularly by air carriers, to carry the package. MTB considers neither of these possibilities so serious, however, as to require a change in the rule as proposed. The rule is purposely flexible so that compliance with the requirement for written notification may be achieved by whichever means the shipper determines most appropriate. As common carriers by aircraft do not presently require shippers to identify excepted packages by external markings or hazard warning entries on the air waybill, MTB does not believe they will be so inclined following publication of

this rule, except through implementation of the ICAO requirements. Since the ICAO requirement is one option contained in the final rule, this can be worked out by the shippers and carriers involved.

The National Bureau of Standards of the Department of Commerce sees the requirement for an additional written notice on their multipurpose shipping form as being very inconvenient. As an alternative, they propose that the shipper's certification required by § 172.204 also be acceptable. While the commenter's proposal has merit, it could not be effectively implemented without also retaining the descriptions "radioactive material, instruments and articles" and "radioactive material, limited quantity, n.o.s." as proper shipping names. With the availability of those proper shipping names, a shipper could then elect to describe its packages in the manner presently required for surface mode shipments. Essentially, this would require the shipper to make a determination of which option is most acceptable: one that involves the simple statement provided in § 173.421-1(a), or another that requires, as a minimum, entries for the proper shipping name, identification number, total quantity, the name of each radionuclide, a description of the physical and chemical form, the activity contained in each package, and the shipper's certification. MTB believes an overwhelming majority of shippers would elect the former method and for that reason has decided not to provide for the suggested alternative which could generate confusion.

Associated with comments received on the proposal to require written notification as to the package contents are counter-proposals from several sources which suggest that limited quantity radioactive materials be subject to package marking requirements presently applicable to all other hazard classes. Presently, there is basic agreement between the U.S. and international regulations in not requiring package markings and MTB still agrees with reasoning which supports not requiring external markings on limited quantity radioactive materials and radioactive instruments and articles. There are no specific precautions that a carrier need take when transporting these materials under normal conditions. If the packages are involved in an accident or are lost, their radioactive nature is communicated by: (1) Marking on the inner packaging (§ 173.421(d)); and (2) the information transmitted on the "notice enclosed in or on the package, included with the packing list or otherwise forwarded with

the package" (§ 173.421-1(a)). MTB believes this immediately available information adequately alerts personnel of the hazard which is present in the event of a mishap.

Comments filed on behalf of the Radiopharmaceutical Shippers and Carriers Conference called attention to a redundancy when the description "radioactive material, limited quantity, n.o.s." is used with the required statement "This package meets all requirements of 49 CFR 173.391 (now § 173.421) for limited quantity radioactive materials." Those comments infer that redundant information in shipping descriptions is unnecessary and should not be required. MTB agrees that this information can be combined in a single statement and still meet the intended purposes. As a result, the required statement now reads "This package conforms to conditions and limitations specified in 49 CFR 173.421 for Radioactive Material, limited quantity, n.o.s., UN 2910, 49 CFR 173.422 for Radioactive Material, Instruments and Articles, UN 2911; or 49 CFR 173.424 for Radioactive material, articles manufactured from natural or depleted uranium or natural thorium, UN 2909", as appropriate.

4. *Hazard ranking.* The proposal to separate radioactive material in limited quantities from the broad class of radioactive materials appearing in § 173.2 and position it between "corrosive material (solid)" and "irritating materials" was met with widespread approval. However, E.I. du Pont de Nemours and Company (Du Pont) expressed its concern over materials which also meet the definition of a higher order hazard class being subject to specification packaging, marking, labeling, shipping paper, and placarding requirements regardless of the quantity of the other hazardous material present and, therefore, the degree of hazard contained. Du Pont went on to say that compliance with the proposed requirements, if unaltered, would increase its costs by \$750,000 annually due to increases in packaging, freight and administrative expenses while providing no commensurate increase in safety. The comments do not contain data which support Du Pont's assertion that transportation-related costs would increase significantly. However, the comments seem to suggest that the extremely small number of incidents involving limited quantity radioactive materials as reported to MTB, could not, in a cost-benefit analysis, justify even a slight percentage increase of those costs. Du Pont's comments on this topic close by

suggesting that any final rule pertaining to the reordering of the precedence of hazards table include an exception for limited quantity radioactive materials meeting the definition of a higher order hazard, in quantities equal to or less than one (1) pint (liquid or solid) and, alternatively, require such materials to be subject to the requirements of § 173.421 as amended by this rulemaking.

Since it is the intent of these amendments to grant regulatory relief to commonly shipped materials which have demonstrated an outstanding history of safe transportation, MTB agrees with Du Pont's recommendation that provisions be made to continue the broad exception from the regulations for limited quantity radioactive materials which also meet the definition of certain other hazard classes. To accomplish this, it was necessary to include radioactive materials in § 173.4 and withdraw the original proposal of reordering radioactive materials in limited quantities as a separate description in § 173.2(a). These materials are now identified as an exception in § 173.2(b)(5). Following those actions, it was then necessary to specify in § 173.421-2 requirements which preserve the previous exceptions from specification packaging, marking, and labeling for limited quantity radioactive materials meeting the definitions of certain other hazard classes, without jeopardizing safety by completely disregarding the other hazard. In § 173.421-2, two instances are considered in which limited quantity radioactive materials that also meet the definition of an additional hazard class may be offered for transportation.

The first instance (§ 173.421-2(a)) pertains to materials in hazard classes other than ORM-A, B, and C and combustible liquids in packagings having a rated capacity of 110 gallons or less. This rule directs shippers to class the material by the non-radioactive material hazard class and to prepare packages for shipment in accordance with provisions applicable to that other class.

Section 173.421-2(b) pertains to materials meeting the definition of an ORM-A, B, or C, and combustible liquids in packagings having a rated capacity of 110 gallons or less. In these instances, if the material is a hazardous waste or hazardous substance or if it is to be transported in a mode appropriate to the ORM class, the radioactivity is subrogated to the status of being the subsidiary hazard and the shipper is directed to class the material in the other hazard class. If, however, the

material is not a hazardous waste or hazardous substance and the material is offered for transportation in a mode to which requirements of the HMR pertaining to the specific material and hazard class do not apply, the shipper is required to class it a radioactive material.

For packages not classed radioactive material, an indication of the presence of radioactive materials is communicated through a requirement that the shipper enter the statement "Limited quantity radioactive material" on the shipping paper in association with the basic description.

5. "Radiopharmaceuticals" Proper Shipping Name. The proposal to adopt a shipping description which distinguishes radioactive materials used for medical purposes from those used in power production, industrial radiography, and other non-medical applications drew three comments opposing the entry as compared to eight comments favoring the proposal.

In support of this proposal are a variety of shipper and carrier organizations which claim that the description "radiopharmaceuticals" should benefit the medical community, transportation personnel, emergency response teams, and the radiopharmaceutical industry without increasing the risks to public health and safety in transportation. Such benefits are generally thought by these commenters to be derived from:

(1) A more accurate indication of the risk involved in the transport of and, when necessary, an appropriate response to incidents involving radiopharmaceuticals; (2) more expeditious and less costly shipments of health care products; (3) fewer frustrated shipments; and (4) a more accurate characterization of the nature of these materials which improves general understanding without loss of awareness of the radioactive hazard involved.

A comment from the University of Rochester Medical Center expressed opposition to the proposed name because it is viewed as being misleading, if the intent of this change is to distinguish between the more hazardous long-lived radioisotopes and the shorter-lived isotopes used in nuclear medicine which are assumed to be less hazardous. The commenter goes on to say that establishing another name for radioactive material would be confusing to transportation workers and would probably not accomplish the intended goal of speedy delivery.

The ATA response to this proposal suggests the new proper shipping name

is not consistent with United Nations (UN), International Civil Aviation Organization (ICAO), and International Atomic Energy Agency (IAEA) standards which ATA understands to be an on-going goal of MTB. Accordingly, ATA recommends that MTB first introduce this proper shipping name to the UN and IAEA. In addition, since this proposal appears less restrictive and inconsistent with the ICAO technical instructions ATA objects to its adoption as a final rule.

Finally, comments filed by Du Pont expressed the view that the proposed proper shipping name would not provide for the breadth of relief intended and does not address the underlying cause of carrier delays resulting from frequent compliance checks by Federal, State, and local enforcement personnel. In Du Pont's opinion, the underlying cause is a lack of general understanding of the actual levels of hazards present as described by existing proper shipping names which would be more appropriately addressed by providing immediate advice to emergency response personnel with specific information as to the nature of the hazard present. Du Pont continues by claiming their experience indicates the proposed name would apply to only a limited number of products, and though achieving some desirable benefits, that gain would be negated by the additional burden of dual descriptions for international air transportation of these products due to the resulting dissimilar descriptions currently specified by countries which have adopted the Restricted Articles Regulations of the International Air Transport Association. The comment concludes by requesting that MTB withdraw the proposed addition of the proper shipping name "Radiopharmaceuticals, n.o.s." from its final rulemaking while retaining the existing descriptions.

Most of the comments supporting adoption of the description focused on the perceived benefit of more rapid delivery. It is contended that carrier personnel would be able to expedite the movement of these materials without undue surveillance since these products are associated with human health care.

Considering the controversy arising from this proposal MTB has decided not to adopt it since this Docket is designed to address only those issues which are not controversial and which may be handled in an expeditious manner. With the option available for shippers to voluntarily add additional information to the packages and shipping papers, it is thought best to avoid the proper

shipping name "Radiopharmaceuticals, n.o.s." at this time.

B. *Notice No. 10, Exceptions for Small Quantities of Hazardous Materials.* In this MPRM it was proposed to grant significant relief from the Department's Hazardous Materials Regulations for the transportation of small quantities of flammable liquids, flammable solids, oxidizers, organic peroxides, corrosive materials, Poison B, ORM-A, B and C, and limited quantity radioactive materials which also meet the definition of any of these other hazard classes. The relief proposed was dependent on conformance to newly proposed performance packaging requirements, and specified restrictions. As a result of a petition filed by the Scientific Apparatus Makers Association (SAMA), MTB proposed what it believed to be an acceptable standardized packaging for the shipment of these materials. MTB also believes that DOT exemptions (6971, 7755, 7921, 8116, 8285, 8292, 8423, 8581, and 8658), which presently authorize the use of several different packaging techniques, may be eliminated by the proposed rule.

Codification of the rule originally proposed to be in § 173.3(d) has been changed to § 173.4 *Exceptions for small quantities.*

These proposals were made on the basis of favorable shipping experience achieved under exemption which demonstrate that certain innovative techniques are both safe and effective. This rulemaking tailors the terms of those specific exemptions cited above into a rule of general applicability.

1. *General.* MTB received 42 comments from industry, trade associations and one Federal agency relative to Notice No. 10. The ATA objects to small quantities of hazardous materials moving in air transport without identification and suggests that incompatible materials might be shipped together. In general, ATA supports the ICAO rules and feels there should be no exception for small quantities.

MTB believes that the approach toward the exception of small quantities of hazardous materials is correct. Furthermore, it is believed that adequate safeguards are in place to prevent the likelihood of incompatible materials from posing an unacceptable risk during air transportation. MTB is currently recommending that ICAO adopt an exception similar to this rule.

Most of the comments support the proposal to standardize the packagings for small quantities of hazardous materials with only a few minor revisions. Basically, comments concern: (1) Raising the quantity limitations (for liquids and solids) per inner receptacle;

(2) increasing the LD₅₀ value for Poison B materials; and (3) allowing the certification to be placed on the "outside" of the package.

2. *Addition of Materials Belonging to the Combustible Liquid, Flammable Gas and Non-flammable Gas Hazard Classes.* One commenter recommended the inclusion of flammable gases, nonflammable gases, and combustible liquids to the list of authorized materials. MTB has not added these gases because it would be beyond the scope of the NPRM. Combustible liquids, other than those which are hazardous wastes or hazardous substances, in quantities of 110 gallons or less are not subject to the regulations, therefore, the inclusion of this hazard class is unnecessary.

3. *Increased Quantity Limits.* Nearly one-third of the commenters suggested that the quantity limitation per inner receptacle as proposed in paragraph (d)(1) (i) and (iii) of § 173.3 be increased from the proposed 25 milliliters for liquids and 25 grams for solids to at least 100 milliliters for liquids and 100 grams for solids (except for poisons) as "these are the quantities requested by customers".

MTB has increased the maximum permissible quantity limitation per inner receptacle to 30 milliliters for liquids and 30 grams for solids. MTB prefers keeping the quantity limit at amounts which it considers reasonable from a safety standpoint and yet adequate to meet the needs of shippers.

Over a third of the commenters suggested that MTB reconsider the quantity limitation for Poison B materials as proposed in paragraph (d)(1)(iii) of § 173.3 and clarify the wordings in the paragraph. Some commenters believe that the LD₅₀ should be increased anywhere from 5 times to 1000 times the LD₅₀ value. Most of the commenters believe that the more stringent packaging requirements would provide more than adequate safety protection for Poison B materials and, in the event of an inner receptacle failure during transportation, the contents would be taken-up by the absorbent material surrounding it, thereby greatly mitigating the potential for exposure of a harmful quantity.

MTB agrees with the commenters' assertions relative to the high integrity of the packagings, but believes an increase of only 20 times the LD₅₀ value to be a more sound approach toward minimizing the risk potential of packages containing Poison B materials. MTB believes that by limiting the maximum quantity per inner receptacle, toxic materials, such as parathion, may be safely transported without posing a

significant risk to cargo handlers and emergency response personnel. This paragraph has also been revised for clarification.

4. *Miscellaneous Comments to Proposed § 173.3.* One commenter suggests that the "closure" requirement as proposed in paragraph (d)(3) of § 173.3 should apply to air shipments only. MTB disagrees. The closure requirement was a critical element in MTB's consideration to propose a broad exception for "small quantity" shipments when transported by all modes and would provide an extra margin of safety that supports the adoption of the exceptions.

Two commenters suggested that MTB reword the compression requirements proposed in paragraph (d)(6)(i) of § 173.3 for clarity. MTB has revised this paragraph as a few words were erroneously omitted in the NPRM.

One commenter requested clarification as to whether all five drop tests proposed in paragraph (d)(8)(ii) of § 173.3 must be performed. All tests must be conducted to establish the performance of the package. However, the five tests need not be performed on the same package. The paragraph is revised by replacing the word "any" with the word "each".

Two commenters questioned the six-foot drop proposal. MTB believes the six-foot drops are necessary to assure an acceptable level of safety for shipments moving under a broad exception from the communication regulations.

A commenter suggests that the words "or 173.25" as proposed in paragraph (d)(7) of § 173.3 be deleted. MTB agrees, noting that in this instance, the potential hazard would be the violation of § 173.21. The packagings (cushioning material), as proposed, must be capable of absorbing the entire content of the inner receptacle. Section 173.21 effectively forbids the offering of incompatible materials together in the same package or overpack.

Two commenters believe the 65 pound weight limit as proposed in paragraph (d)(8) of § 173.3 is unnecessarily restrictive. MTB disagrees. The same requirement currently exists for materials classed ORM-D which contain many of the basic materials addressed in this rulemaking. The 65 pound gross weight limitation per package contributes to safe handling and limits the aggregate risk presented by an individual package; similar benefits should be achieved with the new packaging without being unnecessarily restrictive to shippers or consignees. In addition, MTB has removed the

reference "29.48 kilograms" from the paragraph. Persons wishing to use the metric units may refer to § 173.26.

Several commenters opposed the requirement of placing the certification "inside" the package as proposed in paragraph (d)(9) of § 173.3 and contend that it should appear on the outside where it may be seen without opening the package. MTB has reconsidered its approach on this issue and has modified the rule.

Paragraph (b) of § 173.4 contains the same date that is specified in § 173.421-1(b)(2). This was done so that both exemptions from the legislative prohibition to transport radioactive materials on passenger-carrying aircraft could be evaluated for renewal at the same time.

5. *Limited Quantities of Radioactive Materials on Passenger-Carrying Aircraft.* See Federal Register issued May 2, 1983 (48 FR 19719).

6. *Editorial amendment.* Paragraph (g) of § 172.101 is revised to reflect a reference to § 171.3, 173.3, 173.4 and 173.5 since each contains certain exceptions in addition to those that were referenced in paragraph (g).

II. *Classification of Rule, Reporting Requirements, and Impact on Small Entities.* Non-major rule. MTB has determined that this rule, as promulgated, is not a "major rule" under the terms of Executive Order 12291 and

significant under DOT procedures (44 FR 11034). A final regulatory evaluation and environmental assessment is available in the Docket at the address shown above.

Paperwork Reduction Act.

Information collection requirements contained in this regulation (§ 173.421-1) have been approved by the Office of Management and Budget under the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96-511) and have been assigned OMB control number 2137-0039.

Impact on Small Entities. Based on limited information available concerning size and nature of entities likely to be affected by this amendment, I certify that this amendment will not, as promulgated, have a significant economic impact on a substantial number of small entities. As these revised rules represent a reduction of administrative controls, the economic impact on small entities will be favorable.

III. *Thesaurus of Indexing Terms.* The following list of *Federal Register Thesaurus of Indexing Terms* apply to this rulemaking:

List of Subjects

49 CFR Part 172

Hazardous materials transportation, Labeling, Packaging and containers.

49 CFR Part 173

Hazardous materials transportation, Packaging and containers.

49 CFR Part 175

Air carriers, and Radioactive materials.

In consideration of the foregoing, 49 CFR Parts 172, 173, and 175 are amended as follows:

PART 172—HAZARDOUS MATERIALS TABLES AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

1. In § 172.101, paragraph (g) is revised, and the Hazardous Materials Table is amended as follows:

§ 172.101 Purpose and use of hazardous materials table.

(g) Column 5 references the applicable packaging section of Part 173 of this subchapter. Exceptions from some of the requirements of this subchapter are noted in column 5(a); others are contained in §§ 171.3, 173.3, 173.4, and 173.5 of this subchapter in addition to those contained in Parts 174, 175, 176, and 177 of this subchapter. References to specific packaging requirements and certain additional exceptions are noted in column 5(b).

§ 172.101 Hazardous materials table.

EAW	Hazardous materials descriptions and proper shipping names	Hazard class	Identification number	Label(s) required (if not excepted)	Packaging		Maximum net quantity in one package		Water shipments		
					Exceptions	Specific requirements	Passenger carrying aircraft or nuclear	Cargo only aircraft	Cargo vessel	Passenger vessel	Other requirements
(1)	(2)	(3)	(3)(A)	(4)	(5)(a)	(5)(b)	(6)(a)	(6)(b)	(7)(a)	(7)(b)	(7)(c)
	(REVISE) Radioactive material, instruments and articles. Radioactive material, limited quantity, n.o.s.	Radioactive material. Radioactive material.	UN2911	None	173.421-1 173.422	173.421-1 173.422			1, 2	1, 2	
	(ADD) Radioactive material, articles, manufactured from natural or depleted uranium or natural thorium.	Radioactive material.	UN2910	None	173.421 173.421-1	173.421 173.421-1			1, 2	1, 2	
			UN2909	None	173.421-1 173.424	173.421-1 173.424			1, 2	1, 2	

2. In § 172.204, paragraph (c)(4) is revised to read as follows:

§ 172.204 Shipper's certification.

(c) * * *

(4) *Radioactive material.* Each person who offers any radioactive material for transportation aboard a passenger-carrying aircraft shall sign (mechanically or manually) a printed

certificate stating that the shipment contains radioactive material intended for use in, or incident to, research, or medical diagnosis or treatment.

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

3. In § 173.2 paragraph (a)(1) is revised and paragraph (b)(5) is added to read as follows:

§ 173.2 Classification of a material having more than one hazard as defined in this Part.

(a) * * *

(1) Radioactive material (except a limited quantity).

(b) * * *

(5) A limited quantity radioactive material that also meets the definition of another hazard class (see § 173.421-2).

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4. Section 173.4 is added to read as follows:

§ 173.4 Exceptions for small quantities.

(a) Small quantities of Flammable liquids, Flammable solids, Oxidizers, Organic peroxides, Corrosive materials, Poison B, and ORM A, B, C, and Radioactive materials that also meet the definition of one or more of these hazard classes are not subject to any other requirements of this subchapter if—

(1) The maximum quantity of material per inner receptacle is limited to:

(i) Thirty (30) milliliters for authorized liquids, other than poisons;

(ii) Thirty (30) grams for authorized solids, other than poisons;

(iii) Twenty (20) times the LD₅₀ value (in milligrams) for oral or dermal toxicity (whichever is most restrictive) of any Poison B material according to the criteria specified in § 173.343; for example, a maximum quantity of 800 milligrams is authorized per inner receptacle for a material having an LD₅₀ value of 40 milligrams; and

(iv) An activity level not exceeding that specified in §§ 173.421, 173.422, or 173.424, as appropriate, for a package containing a radioactive material;

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

(i) Is not liquid-full at 130°F, and

(ii) Is constructed of plastic having a minimum thickness of no less than 0.006-inch (0.2 millimeters), or earthenware, glass, or metal;

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

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

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

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

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

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

(i) Each of the following free drops made from a height of 8 feet direct onto a solid unyielding surface without breakage or leakage from any inner receptacle and without a substantial reduction in the effectiveness of the package:

(A) One drop flat on bottom;

(B) One drop flat on top;

(C) One drop flat on the long side;

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

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

(ii) A compressive load in pounds determined by multiplying by two the maximum horizontal cross section of the package (in square inches) in the position in which it would normally be transported without a substantial reduction in effectiveness; the load shall be applied continuously during a period of 24 hours, uniformly against the top and bottom of the package which is in the position in which it is intended to be normally transported.

Note.—Each of the above tests may be performed on a different, but identical, package i.e., all tests need not be performed on the same package.

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

(8) The gross weight of the completed package does not exceed 65 pounds;

(9) The shipper certifies conformance with this section by marking the outside of the package with the statement: "This package conforms to conditions and limitations specified in 49 CFR 173.4";

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

(11) The package, unless approved by the Associate Director for HMR, does not contain a material assigned any of the following identification numbers associated with the hazardous materials description in §§ 172.101 or 172.102 of this subchapter:

1092	1831
1131	1873
1259	2031
1380	2032
1397	2496
1419	2628
1422	2813
1432	2845
1433	2924
1491	2925
1504	9191
1749	9193
1798	

(b) In addition to the requirements of this section, a package containing a radioactive material shall conform with the requirements of §§ 173.421(a)–(e), or 173.422(a)–(g), as appropriate. A package containing a radioactive material may not be offered for transportation aboard a passenger-carrying aircraft under provisions of this section after May 2, 1985, unless the material is intended for use in, or incident to, research, or medical diagnosis or treatment.

§ 173.119 (Amended)

5. In § 173.119, the introductory text of paragraphs (a) and (m) is amended by adding "radioactive material"

immediately following the comma after the word "oxidizer".

6. In § 173.421, the introductory text is amended by adding the words "shipping paper and certification" immediately following the comma after the words "specification packaging"; paragraph (d) is amended by removing the word "and"; paragraph (e) is amended by removing the period at the end of the sentence and inserting in its place a semicolon followed by the word "and"; and paragraph (f) is added to read as follows:

§ 173.421 Limited quantities of radioactive materials.

(f) The material is otherwise prepared for shipment as specified in § 173.421–1.

7. Section 173.421–1 is added to read as follows:

§ 173.421–1 Additional requirements for limited quantities of radioactive materials and radioactive instruments and articles.

(a) A limited quantity radioactive material or radioactive material instrument or article prepared for shipment under the provisions of §§ 173.421, 173.422, or 173.424 must be certified as being acceptable for transportation by having a notice enclosed in or on the package, included with the packing list, or otherwise forwarded with the package. This notice must include the name of the consignor or consignee and the statement "This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantity, n.o.s., UN2910; 49 CFR 173.422 for excepted radioactive material, instruments and articles, UN2911; or 49 CFR 173.424 for excepted radioactive material, articles manufactured from natural or depleted uranium or natural thorium, UN2909", as appropriate.

(b) A limited quantity radioactive material classed radioactive material and prepared for shipment under provisions of §§ 173.421, 173.422, 173.424 or § 173.421–2 is not subject to the requirements of this subchapter, except for:

(1) Sections 171.15, 171.18, 174.750, 176.710 and 177.861 of this subchapter pertaining to the reporting of incidents and decontamination when transported by a mode other than air; or

(2) Sections 171.15, 171.18, 175.45, and 175.700(b) of this subchapter pertaining to the reporting of incidents and decontamination if transported by aircraft. Beginning May 3, 1985, it is also necessary to comply with requirements

specified in §§ 173.448(f) and 175.700(c) of this subchapter.

(Approved by the Office of Management and Budget under control number 2137-0039)

8. Section 173.421-2 is added to read as follows:

§ 173.421-2 Requirements for multiple hazard limited quantity radioactive materials.

(a) Except as provided in paragraph (b) of this section or in § 173.4 of this subchapter, when a limited quantity radioactive material meets the definition of another hazard class, it shall be:

- (1) Classed for the additional hazard;
- (2) Packaged to conform with requirements specified in §§ 173.421(a)-(e) or 173.422(a)-(g), as appropriate; and
- (3) Offered for transportation in accordance with requirements applicable to the hazard for which it is classed.

(b) When a limited quantity radioactive material meets the definition of an ORM-A, B, or C, or is a combustible liquid in a packaging having a rated capacity of 110 gallons or less, it shall be:

- (1) Classed radioactive material if:
 - (i) The material is not a hazardous waste or hazardous substance; and
 - (ii) The material is offered for transportation in a mode to which requirements of this subchapter pertaining to the specific material and hazard class do not apply;
- (2) Classed combustible liquid or ORM-A, B, or C, as appropriate, if:
 - (i) The material is a hazardous waste or hazardous substance; or
 - (ii) The material is offered for transportation in a mode to which requirements of this subchapter pertaining to the specific material and hazard class do apply;
- (3) Packaged to conform with requirements specified in §§ 173.421(a)-(e) or 173.422(a)-(g), as appropriate; and
- (4) Offered for transportation in accordance with requirements applicable to the hazard for which it is classed.

(c) A limited quantity radioactive material which is classed other than radioactive material under provisions of paragraphs (a) or (b) of this section is excepted from requirements of §§ 173.421-1(a), 172.203(d), and 172.204(c)(4) of this subchapter if the entry "Limited quantity radioactive material" appears on the shipping paper in association with the basic description.

(d) Beginning May 3, 1985, a limited quantity radioactive material classed other than radioactive material may not be offered for transportation aboard a passenger-carrying aircraft unless that

material is intended for use in, or incident to, research, or medical diagnosis or treatment.

9. In § 173.422, the introductory text is amended by adding "shipping paper and certification", immediately following the comma after the word "packaging"; paragraph (f) is amended by removing the word "and"; paragraph (g) is amended by removing the period at the end of the sentence and inserting, in its place, a semicolon followed by the word "and"; and paragraph (h) is added to read as follows:

§ 173.422 Exceptions for instruments and articles.

(h) The instrument or article is otherwise prepared for shipment as specified in § 173.421-1.

10. In § 173.424, the introductory text is amended by adding the words "shipping paper and certification" immediately following the word "packaging"; paragraph (a) is amended by removing the word "and"; paragraph (b) is amended by removing the period at the end of the sentence and inserting, in its place, a semicolon followed by the word "and"; and paragraph (c) is added to read as follows:

§ 173.424 Excepted articles containing natural uranium or thorium.

(c) The article is otherwise prepared for shipment as specified in § 173.421-1.

§ 173.448 [Amended]

11. In § 173.448, paragraph (f) is amended by removing the words "or is excepted under the provisions of § 175.10 of this subchapter".

PART 175—CARRIAGE BY AIRCRAFT

§ 175.10 [Removed and Reserved]

12. In § 175.10, paragraph (a)(6) is removed and reserved.

13. In § 175.700, paragraph (c) is revised to read as follows:

§ 175.700 Special limitations and requirements for radioactive materials.

(c) Except as provided in §§ 173.4, 173.421-1, and 173.421-2 of this subchapter, no person may carry aboard a passenger-carrying aircraft any radioactive material other than a radioactive material intended for use in, or incident to, research, or medical diagnosis or treatment.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

Issued in Washington, D.C. on June 21, 1983.

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[FR Doc. 83-17319 Filed 6-29-83, 9:45 am]

BILLING CODE 4910-80-M