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49 CFR Parts 171, 172, 173, et al.
Hazardous Materials: Compatibility With the Regulations of the International Atomic Energy Agency (RRR); Final Rule

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

49 CFR Parts 171, 172, 173, 174, 175, 176, 177 and 178

[Docket No. PHMSA–2009–0063 (HM–250)]

RIN 2137–AE38

Hazardous Materials: Compatibility With the Regulations of the International Atomic Energy Agency (RRR)

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

ACTION: Final rule.

SUMMARY: PHMSA, in coordination with the Nuclear Regulatory Commission (NRC), is amending requirements in the Hazardous Materials Regulations (HMR) governing the transportation of Class 7 (radioactive) materials based on recent changes contained in the International Atomic Energy Agency (IAEA) publication ''Regulations for the Safe Transport of Radioactive Material, 2009 Edition, IAEA Safety Standards Series No. TS–R–1.'' The purposes of this rulemaking are to harmonize requirements of the HMR with international standards for the transportation of Class 7 (radioactive) materials and update, clarify, correct, or provide relief from certain regulatory requirements applicable to the transportation of Class 7 (radioactive) materials.

DATES: *Effective date:* October 1, 2014.

Voluntary compliance date: PHMSA is authorizing voluntary compliance beginning July 11, 2014.

Delayed compliance date: Unless otherwise specified, compliance with the amendments adopted in this final rule is required beginning July 13, 2015.

Incorporation by reference date: The incorporation by reference of certain publications listed in this rule is approved by the Director of the Federal Register as of October 1, 2014.

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SUPPLEMENTARY INFORMATION:

I. Executive Summary

In this final rule, PHMSA is amending the Hazardous Materials Regulations (HMR; 49 CFR parts 171–180) to incorporate changes adopted in the 2009 Edition of the IAEA Safety Standards publication titled ''Regulations for the Safe Transport of Radioactive Material, 2009 Edition, Safety Requirements, No. TS–R–1'' (hereinafter referred to as ''TS–R–1.'') [1] Additionally, PHMSA is making other changes to amend or clarify the requirements for transport of radioactive materials. These changes will help ensure that the classification, packaging requirements, and hazard communication requirements for shipments of radioactive materials provide the requisite level of public safety and are consistent with those employed throughout the world.

The harmonization of domestic and international standards for hazardous materials transportation enhances safety by creating a uniform framework for compliance. Harmonization also facilitates international trade by minimizing the costs and other burdens of complying with multiple or inconsistent safety requirements and avoiding hindrances to international shipments. Harmonization has become increasingly important as the volume of hazardous materials transported in international commerce grows.

Accordingly, federal law and policy strongly favor the harmonization of domestic and international standards for hazardous materials transportation. The Federal hazardous materials transportation law (Federal hazmat law; 49 U.S.C. 5101 *et seq.*) directs PHMSA to participate in relevant international standard-setting bodies and encourages DOT to align the HMR with international transport standards to the extent practicable, while recognizing that deviations may be appropriate, at times in the public interest (see 49 U.S.C. 5120). Under this authority, PHMSA actively participates in relevant international standard-setting bodies and promotes the adoption of standards consistent with the high safety standards set by the HMR. PHMSA's continued leadership in maintaining consistency with international regulations and enhances the hazardous materials safety program.

II. Background

Under their respective statutory authorities, DOT and the NRC jointly regulate the transportation of radioactive materials to, from, and within the United States. In accordance with their July 2, 1979, Memorandum of Understanding (a copy of which has been placed in the docket of this rulemaking) (44 FR 38690):

1. DOT regulates both shippers and carriers with respect to:

A. Packaging requirements;

B. Communication requirements for:

- Shipping paper contents,
- Package labeling and marking requirements, and
- Vehicle placarding requirements;

C. Training and emergency response requirements; and

D. Highway routing requirements.[2]

2. NRC requires its licensees to satisfy requirements to protect public health and safety and to assure the common defense and security, and:

A. Certifies Type B and fissile material package designs and approves package quality assurance programs for its licensees;

B. Provides technical support to PHMSA and works with PHMSA to ensure consistency with respect to the transportation of Class 7 (radioactive) materials; and

C. Conducts inspections of licensees and an enforcement program within its jurisdiction to assure compliance with its requirements.

Since 1968, PHMSA and the NRC (and their predecessor agencies) have, to the extent practicable, harmonized their

[1] A copy of the 2009 Edition of TS–R–1may be obtained from the U.S. distributors, Bernan, 15200 NBN Way, P.O. Box 191, Blue Ridge Summit, PA 17214, telephone 800–865–3457, email: *customercare@bernan.com*, or Renouf Publishing Company Ltd., 812 Proctor Ave., Ogdensburg, NY 13669, telephone: 1–888–551–7470, email: *orders@renoufbooks.com.* An electronic copy of TS–R–1 has been placed in the docket of this rulemaking and may also be found at the following IAEA Web site: *http://www-pub.iaea.org/MTCD/publications/PDF/Pub1384_web.pdf.*

[2] Within DOT, PHMSA is currently delegated the authority to carry out the functions assigned to DOT, except for highway routing requirements which are set forth in regulations of the Federal Motor Carrier Safety Administration. 49 CFR part 397, subpart D.

respective regulations with international regulations of the IAEA in:

- Safety Series No. 6, Regulations for the Safe Transport of Radioactive Material, as published in 1961 and revised in 1964 and 1967. Amendments to the HMR were adopted in a final rule published on October 4, 1968 in Docket HM–2 (33 FR 14918).
- The major updates of Safety Series No. 6 in 1973 and 1985. See the final rules published on March 10, 1983 in Docket HM–169 (48 FR 10218) and September 28, 1995, in Docket HM–169A (60 FR 50291).
- The 1996 major revision to the Safety Series No. 6, renamed ''Regulations for the Safe Transport of Radioactive Material, 1996 Edition, No. ST–1'' issued by the IAEA in 1996 and republished in 2000 to include minor editorial changes at which time the previous title was changed to ''Regulations for the Safe Transport of Radioactive Material, 1996 Edition, No. TS–R–1 (ST–1, Revised).'' See the final rule published on January 26, 2004, in Docket HM–230 (69 FR 3632).

Since then, the IAEA has published amendments and revised editions of TS–R–1 in 2003, 2005, and 2009.[3] PHMSA published a notice of proposed rulemaking (NPRM) on August 12, 2011 (76 FR 50332) that proposed to amend the HMR to maintain alignment with the 2009 Edition of TS–R–1, which incorporates all of the changes made to TS–R–1 in the 2003 amendments, the 2005 Edition, as well as other revisions. In this final rule, PHMSA is adopting the proposal with some changes. In addition to changes to harmonize with TS–R–1, PHMSA is enacting regulatory amendments identified through internal regulatory review processes to update, clarify, correct, or provide relief from certain regulatory requirements applicable to the transportation of Class 7 (radioactive) materials. Notable amendments to the HMR in this final rule include the following:

- Revise paragraph § 173.25(a)(4) to adopt the new TS–R–1 requirement for the marking of all overpacks of Class 7 (radioactive) packages with the word ''OVERPACK.''
- Revise §§ 172.203(d)(3) and 172.403(g) to clarify that the total activity indicated on the shipping paper and label must be the maximum activity during transportation.
- Revise Table 1 in § 172.504 to additionally require conveyances carrying unpackaged LSA–I material or SCO–I, all conveyances required by §§ 173.427, 173.441, and 173.457 to operate under exclusive use conditions, and all closed vehicles used in accordance with § 173.443(d) to be placarded. This change is a result of internal PHMSA review.
- Update definitions in § 173.403 for contamination, criticality safety index (CSI) for conveyances, fissile material, LSA, and radiation level. These changes are proposed primarily to align with definitions in the TS–R–1, and the change to the definition of ''criticality safety index'' is made to align with the NRC definition.
- Extend the retention period for Type A, Type IP–2, and Type IP–3 package documentation from one year to two years, to coincide with the minimum retention period currently required for shipping papers. PHMSA is also including more detailed language describing the kinds of information required to be included as part of the Type A package documentation. This change is being made based on internal PHMSA review of existing regulations, and is intended to ensure proper testing and preparation of these packages prior to being offered for transportation.
- Require that any conveyance, overpack, freight container, tank, or intermediate bulk container involved in an exclusive use shipment under § 173.427 or § 173.443(b) be surveyed with appropriate radiation detection instrumentation after each such shipment, and not be permitted to be used for another such exclusive use shipment until the removable surface contamination meets package contamination limits and the radiation dose rate at each accessible surface is no greater than 0.005 mSv/h (0.5 mrem/h). These changes are a result of internal PHMSA review.
- Update matter incorporated by reference to align with updated references in the TS–R–1 in § 171.7 and applicable sections.
- Clarify labeling requirements for radioactive shipments with subsidiary hazards in § 172.402. This change is a result of internal PHMSA review.
- Require that, when it is evident that a package of radioactive material or conveyance carrying unpackaged radioactive material is leaking or suspected to have leaked, access to the package or conveyance must be restricted and, as soon as possible, the extent of contamination and the resultant radiation level of the package or conveyance must be assessed in § 173.443. This will more closely align with the requirements in TS–R–1.

As in PHMSA's past rulemakings to incorporate updates of the IAEA regulations into the HMR, PHMSA has worked in close cooperation with the NRC in the development of this rulemaking. The NRC published a parallel NPRM on May 16, 2013 (78 FR 28988). PHMSA anticipates that NRC will publish a parallel final rule at a future date. Since the proposed rules will be published separately, there is a risk of differences in overlapping proposals that may affect the compatibility of the NRC and PHMSA regulations. PHMSA and the NRC have coordinated the development and publication schedules for the final rules. Several actions have been taken to mitigate possible problems that may arise from such asynchronous publication, including but not limited to: A delayed mandatory compliance date, enforcement guidance/discretion, and deferred consideration of a proposed change to § 173.453 regarding a fissile material exception for uranium enriched in uranium-235. PHMSA believes these actions, most specifically the delayed mandatory compliance date, will allow the NRC to complete its rulemaking cycle and to publish a final rule with an effective date in line with our effective date. This final rule addresses only the areas for which DOT has jurisdiction as defined in the MOU with NRC.

In response to the 2011 NPRM we received comments from the following persons, companies, associations and other entities:

- Alaska Inter-Tribal Council
- B&W Y–12 L.L.C. (B&W)
- Energy Solutions
- J. L. Shepherd & Associates (J. L. Shepherd)
- Lawrence Laude
- Nuclear Information and Resource Service (NIRS) & Citizens for Alternatives to Chemical Contamination (CACC) (NIRS & CACC)
- QSA Global Inc. (QSA Global)
- Regulatory Resources
- The Pennsylvania State University (Penn State)
- U.S. Army Corps of Engineers (USACE)
- United States Enrichment Corporation (USEC)
- Veolia ES Technical Solutions, L.L.C. (Veolia)

These comments are discussed in the section-by-section portion of this rule.[4] In considering each proposal in the NPRM and each comment, we reviewed and evaluated each amendment on its own merit, on the basis of its overall impact on transportation safety, and on the basis of the economic implications

[3] In 2012, the IAEA published the Specific Safety Requirements-6 (SSR–6) which may be addressed in a future rulemaking.

[4] Comments which were outside the scope of this rulemaking are not addressed in this final rule.

associated with its adoption into the HMR. Our goal is to harmonize the HMR with TS–R–1 without diminishing the level of safety currently provided by the HMR or imposing undue burdens on the regulated community.

III. Section-by-Section Review

Part 171

Section 171.7

In § 171.7, which contains a listing of all standards incorporated by reference into the HMR, PHMSA is replacing the 1996 edition of ''TS–R–1 (ST–1, Revised)'' with the 2009 edition of TS–R–1, with which we are harmonizing requirements in the HMR. We are also replacing the International Organization for Standardization standard ''ISO 2919–1980(E) Sealed radioactive sources—classification'' with ''ISO 2919–1999(E) Radiation Protection—Sealed radioactive sources—General requirements and classification,'' applicable to § 173.469(d).

We are removing from § 171.7 all entries that are only listed in §§ 178.356 and 178.358 covering the construction and use of 20PF and 21PF specification overpacks, respectively. These overpacks are no longer authorized in hazardous materials regulations. We are also deleting references to 2R vessels, and any materials incorporated by reference solely into § 178.360. The specifications for these packages are being removed from §§ 178.356, 178.358, and 178.360, respectively, as discussed below. J. L. Shepherd raised a concern about a possible effect on currently issued special permits that allow use of 2R vessels, but these changes would not affect existing special permits.

As a consequence of the removal of §§ 178.356, 178.358, and 178.360 the following references are being removed from the list of matter incorporated by reference in § 171.7:

- ANSI B16.5–77, Steel Pipe Flanges, Flanged Fittings, 1977 from § 171.7(d)(2),
- AWWA Standard C207–55, Steel Pipe Flanges, 1955 from § 171.7(i)(1),
- the reference heading for *American Water Works Association* from § 171.7(i); and
- all listings and the reference heading for Department of Energy under § 171.8(p)

○ USDOE, CAPE–1662, Revision 1, and Supplement 1, Civilian Application Program Engineering Drawings, April 6, 1988, from § 171.7(p)(1)

○ USDOE, Material and Equipment Specification No. SP–9, Rev. 1, and Supplement—Fire Resistant Phenolic Foam, March 28, 1968, from § 171.7(p)(2)

○ USDOE, KSS–471,—Proposal for Modifications to U.S. Department of Transportation Specification 21PF–1, Fire and Shock Resistant Phenolic Foam—Insulated Metal Overpack, November 30, 1986 from § 171.7(p)(3).

Part 172

Section 172.203

This section details additional description requirements that are required for certain shipments of hazardous materials. As proposed in our NPRM, we are revising § 172.203(d)(2) to specify that when a material is in ''special form'' the words ''special form'' must be included in the description, unless those words already appear in the proper shipping name. Lawrence Laude noted that this change would require that the offeror have the proper documentation to declare the material as special form. We agree, but note that an offeror of special form Class 7 material is already required to maintain documentation showing that the material meets the special form test requirements in § 173.469 or has an IAEA Certificate of Competent Authority showing this (see § 173.476). Consequently, if such documentation does not exist, the offeror may not classify the material as special form. An offeror who does not have the proper special form documentation, or does not wish to classify the material as special form, has the option to not declare it as special form.

In our NPRM we proposed that the activity included on shipping papers and labels required by § 172.203(d)(3) should include all parent radionuclides and daughter products, even those daughters that have half-lives shorter than 10 days and not greater than that of the parent. Several commenters raised concerns on our proposal. Lawrence Laude and J.L Shepherd commented that as proposed the NPRM changes would require listing multiple daughter products on the label with limited space, and create a potential conflict with the 95 percent requirement of § 173.433(g). (§ 173.433(g). requires that those radionuclides that constitute 95% of the total radioactive hazard, based on nuclide-specific activity/Type A ratios, to be listed on the shipping paper) While we did not propose any changes to the listing of the radionuclides, but only to the total activity, we agree this could introduce confusion between the list and the total. Lawrence Laude also noted that the proposed change would introduce an inconsistency with § 173.433(c)(2) for the calculation of A values for chains with short-lived daughters as that paragraph omits short-lived daughters. Lawrence Laude and J. L. Shepherd additionally noted that the A_1 and A_2 values for those radionuclides with short-lived daughters were derived taking the presence of the short-lived daughters into account; adding their activity would not be a fair comparison to the A_1 and A_2 values and would not be in harmony with TS-R-1. To avoid confusion with the nuclides to be listed, and to maintain consistency with the calculated A_1 and A_2 values, we are not adopting the proposed requirement to include daughter products when those daughters have half-lives less than 10 days and not greater than that of the parent.

As proposed in the NPRM, we are also more closely aligning with the wording in TS–R–1 by specifying that the activity should be the maximum activity of the radioactive contents during transport. Lawrence Laude agreed with adding ''maximum'' to require that the offeror take into account changes in the activity due to decay and/or buildup of daughters, and suggested it would be useful to include a short explanation of ''maximum'' in the regulations. We believe the phrase ''maximum activity of the radioactive contents contained in each package during transport'' is self-explanatory.

We are also amending § 172.203(d)(3) to permit the mass of each fissile nuclide for mixtures to be included when appropriate, that is, when there is a mixture present.

Additionally, in § 172.203(d)(4), we are revising the example to clarify that the word ''RADIOACTIVE'' is not required to be included in the description of the category of label.

Section 172.310

This section contains additional marking requirements for packages containing Class 7 (radioactive) material. In the NPRM we proposed to align the marking requirements in this section with the requirements in § 178.350 which references the marking requirements of § 178. 3. Lawrence Laude noted that our proposed change would have the unintended effect of requiring all Type A packages, including those with an AF certificate of compliance, to be marked with ''DOT 7A'' which is also required by § 178.350. The commenter also noted that an alternate approach is to simply change the current marking size requirements in § 172.310 to 12 mm (0.47 inches). We agree and are revising this paragraph accordingly.

Section 172.402

This section prescribes additional labeling requirements for shipments of hazardous materials. We are revising paragraph (d)(1) to clarify that for a package containing a Class 7 (radioactive) material that meets the definition of one or more additional hazard classes a subsidiary label is not required on the package if the non-radioactive material conforms to the small quantity exception in § 173.4, excepted quantities exception in § 173.4a, or de minimis exceptions in § 173.4b. Lawrence Laude suggested modification to clarify that applicable packaging and marking requirements for the subsidiary hazard need not be met. However, our intent is to except these packages only from labeling. Regulatory Resources stated that paragraph (d)(1) is redundant with the referenced paragraphs and should be deleted in its entirety. However we are keeping the paragraph to provide clarity that the subsidiary label is not needed in these situations.

Section 172.403

This section describes labeling requirements for shipments of Class 7 (radioactive) materials. We are correcting the reference in paragraph (d) from § 173.428(d) to § 173.428(e). We are revising paragraph (g)(2) to be consistent with the change included herein for § 172.203(d)(3) to more closely align with the wording in TS–R–1 by specifying that the activity should be the maximum activity of the radioactive contents during transport. In response to several comments, and as discussed under § 172.203(d)(3), we are not including the word ''total'' before ''maximum activity''. Further, we are amending the activity printing requirement on the RADIOACTIVE label to permit the mass of each fissile nuclide, as appropriate for mixtures, to be included.

Section 172.504

This section prescribes general placarding requirements. In the NPRM we proposed to require placards to be affixed to conveyances carrying fissile material packages, unpackaged low specific activity (LSA) material or surface contaminated object (SCO) in category I (i.e., LSA–I and SCO–I respectively), all conveyances required by §§ 173.427 and 173.441 to operate under exclusive use conditions, and all closed vehicles used in accordance with § 173.443(d). This would more closely align domestic placarding requirements with those of TS–R–1.

Regulatory Resources and Lawrence Laude stated their belief that packages bearing a fissile label do not warrant a radioactive placard, as adequate controls are provided by packaging and criticality safety index (CSI) labels. Lawrence Laude recommended that, if placarding fissile shipments is considered necessary, placarding should be limited to shipments required by § 173.457 to be operated under exclusive use. While adoption of placarding for all shipments of packages with fissile labels would be consistent with the requirements of TS–R–1, PHMSA recognizes this could be a burden for shipments of small quantities of fissile material. We are therefore adopting the suggested approach to require placarding only for shipments required by § 173.457 to be operated under exclusive use (that is, packages with CSI greater than 50).

Regulatory Resources stated that under the proposed requirement, a shipper cannot ''apply full markings and labels per 49 CFR 172 Subparts D and E on a package containing low specific activity (LSA) material or surface contaminated objects (SCO) and ship them as exclusive use unless the shipper placards the vehicle—regardless of the label applied.'' While this is true, when it is not required to be shipped as exclusive use, a shipper may apply full markings and labels per 49 CFR part 172 subparts D and E on a package containing LSA material or SCO and choose to not declare the shipment as exclusive use.

Regulatory Resources and Lawrence Laude noted that the placarding of all conveyances required by § 173.441 to operate under exclusive use would extend applicability to shipments where the aggregate transport index (TI) for packages with Radioactive Yellow II labels exceeds 50. Regulatory Resources stated that this would provide little benefit and would result in large training costs, though they did not provide a specific cost estimate. PHMSA believes there is a safety benefit to providing a clear indication to personnel that a package or packages have TI's larger than allowed on non-exclusive use shipments. PHMSA further believes that this benefit will exceed the costs. For further information on costs and benefits, please see the ''placarding'' and ''benefits of the rule'' sections of the RIA placed in the docket for this rulemaking.

Lawrence Laude noted that the use of the word ''conveyances'' in our proposed footnote, at least as defined in § 173.403, would require vessels and aircraft to be placarded, which is not consistent with § 172.504(a). While the definition in § 173.403 does not apply to § 172.504(a), we recognize that such an interpretation could be made. USEC added that based upon previous letters of interpretation changes to the existing text in sections to § 172.504(e) and § 173.427 to require only the conveyance to be placarded and not the conveyance and the package(s) would be beneficial. After analyzing the above comments on the NPRM, we are revising § 172.504(e) Table 1 Footnote 1 to read as set out in the regulatory text of this rule.

Section 172.505

This section describes when placarding for subsidiary risks is required. In paragraph (b), we proposed to remove the reference to ''low specific activity uranium hexafluoride'' to be consistent with changes to § 173.420(e). Lawrence Laude noted that the phrase ''non-fissile, fissile-excepted, or fissile uranium hexafluoride'' covers all the possible shipments requiring subsidiary placarding, so it should suffice to just refer to ''uranium hexafluoride.'' We agree, but choose to list the three different proper shipping names used for uranium hexafluoride for clarity.

Part 173

Section 173.4

This section provides requirements for shipments of small quantities by highway and rail. We proposed to revise paragraph (a)(1)(iv) to remove the reference to § 173.425, as the references in §§ 173.421 and 173.424 already cite the activity limits in § 173.425. Lawrence Laude noted that the reference to § 173.426 should also be deleted since, as noted in the preamble, it also does not specify a dose rate limit. The commenter also noted that the current and proposed § 173.4(b) already invoke §§ 173.421 and 173.424 which give activity limits for the package, making the inner receptacle activity limit references in § 173.4(a)(1)(iv) redundant. We agree and are removing paragraph (a)(1)(iv) from § 173.4.

In the NPRM we proposed to revise paragraph (b) to specify that small quantities of Class 7 (radioactive) materials must satisfy the requirements of §§ 173.421, 173.424, or 173.426 in their entirety. Lawrence Laude asked for justification, noting that as proposed, the change brings in all the requirements of § 173.422, including the requirements for notification, training, and for hazardous waste and hazardous substances, shipping papers; not just the marking change highlighted in our NPRM. We agree and we are revising paragraph (b) to cite only the previously

referenced paragraphs while adding the similar paragraphs of § 173.426. The commenter also noted that, as currently written, § 173.4 does not require shipping papers for small quantity packages containing hazardous waste or hazardous substances and suggested considering whether this needs to be addressed. General relief applicable to all hazard classes and divisions was not proposed in the NPRM, and is outside the scope of this rulemaking.

Lawrence Laude suggested that PHMSA should eliminate the marking requirements of §§ 173.4 and 173.4a for UN2910 and UN2911 excepted packages, viewing them as redundant. We did not propose these changes in the NPRM and such a change would be result in a substantive change not proposed and made available for public comment. Thus, such a change is considered outside the scope of this rulemaking. Commenters are welcome to petition for change by following the process detailed in §§ 106.95 and 106.100.

Section 173.25

This section provides requirements for packages utilizing overpacks. In the NPRM, we proposed to require the ''OVERPACK'' marking on all overpacks containing packages of Class 7 (radioactive) materials, unless package type markings representative of each Class 7 package contained therein are visible from the outside of the overpack.

J.L. Shepherd claimed that the historical meaning and understanding by users of Type B packages is that ''overpacks'' are heat and impact resistant structures, and thus the term should not be used for cardboard boxes, shrink wrap or wooden boxes. However, we did not propose any change to the definition of the term ''overpack'' already found in § 171.8 which does not preclude the use of cardboard boxes, shrink wrap, or wooden boxes as overpacks. The commenter also claimed that the IAEA has never addressed the use of ''overpacks'' related to type B shipments; however, the IAEA does define ''overpack'' in TS–R–1 which applies to all radioactive material packages and has marking requirements for overpacks similar to those proposed in our NPRM.

Lawrence Laude suggested deletion of the text ''(Type IP–1, –2, or –3)'' since industrial package by definition includes Type IP–1, –2, or –3. We agree and have made this change. He also suggested revisions to § 173.25(a)(6). However, we did not propose any changes to that paragraph in the NPRM and so those changes are outside the scope of this rulemaking. Clarifications were also requested on several other portions of this section that were not within the scope of this rulemaking. Lawrence Laude asked for clarification whether an overpack containing only excepted packages would need to be marked only with the UN number(s), consistent with Table 10 of TS–R–1. This is correct, but we see no needed changes to the proposed language. Regulatory Resources also requested we clarify the overpack marking requirements in § 173.448(g)(2), which references subpart D of part 172 and § 173.25(a), by removing the reference to subpart D. Although we agree that, because the part 172 marking requirements do not cover overpacks, this reference is unnecessary, we did not propose any changes to § 173.448 in the NPRM so this is outside the scope of this rulemaking. We may address this in a future rulemaking.

Section 173.401

This section outlines the scope of subpart I; subsection (b) specifies materials that are outside of that scope. We are modifying § 173.401(b)(4) to add the phrase ''which are either in their natural state, or which have only been processed for purposes other than for extraction of the radionuclides.'' We also added ''or determined in accordance with § 173.433'' to account for calculations for mixtures of radionuclides. We are also adding a new paragraph (b)(5) to clarify, based on internal PHMSA review of existing requirements, that non-radioactive solid objects with radioactive substances present on any surfaces in quantities not exceeding the limits cited in the definition of contamination in § 173.403 are not subject to the Class 7 (radioactive) material requirements of the HMR.

B & W requested that we consider PHMSA interpretation 06–0274 (issued May 6, 2008) and add that contaminated items below the consignment exemption limits are also not regulated. We believe this concept is already addressed in the regulations as referenced in the letter of interpretation and have not made this addition. The commenter also requested that we recognize ''free release'' limits that have been established by other federal agencies. We are not aware of any other specific codified federal limits and DOT does not have authority to set such limits.

Section 173.403

Section 173.403 contains definitions specific to Class 7 (radioactive) materials. We are revising the definitions of ''contamination,'' ''criticality safety index (CSI),'' ''fissile material,'' ''low specific activity (LSA) material,'' ''radiation level,'' and ''uranium.'' NIRS & CACC expressed ''serious concerns'' with the changes in the definitions but provided no specific comments.

We are changing the definition of ''contamination'' by deleting the word ''radioactive'' from the present definitions of ''Fixed radioactive contamination'' and ''Non-Fixed radioactive contamination.'' In addition, we are replacing the phrase ''contamination exists in two phases'' with ''there are two categories of contamination.'' Lawrence Laude noted that we were not consistent in our subsequent use of the term used for ''non-fixed contamination'' in the NPRM, using variations such as ''non-fixed (removable) radioactive surface contamination,'' ''removable (non-fixed) radioactive contamination,'' and ''removable radioactive surface contamination.'' We agree this could cause confusion, so we are standardizing by using ''non-fixed contamination'' as given in the definition and have made corresponding edits to §§ 173.421(c), 173.443, 174.715, 176.715, and 177.843.

We are revising the definition of ''criticality safety index (CSI)'' to include the sum of criticality safety indices of all fissile material packages contained within a conveyance. Lawrence Laude suggested that the language ''(rounded up to the next tenth)'' should be deleted from the definition of CSI as this is effectively addressed in the referenced sections of 10 CFR part 71 and would seem to eliminate a valid CSI of zero. The referenced NRC regulations contain the same words as our definition, except the last paragraph which says, ''Any CSI greater than zero must be rounded up to the first decimal place.'' PHMSA is not adopting the suggestion because we are consistent with the NRC definition in 10 CFR 71.4, and we reference 10 CFR 71.59 in our definition which includes the statement, ''Any CSI greater than zero must be rounded up to the first decimal place.'' We are revising the definition of ''fissile material'' to align with NRC's definition and to clarify that certain exceptions are provided in § 173.453. Lawrence Laude suggested that we adopt the IAEA definition, which makes a distinction between fissile nuclides and fissile material, rather than the NRC definition. We choose the NRC definition for domestic consistency and as we believe it more precisely defines what is intended by the regulation.

As proposed we are revising the definition of ''low specific activity

(LSA) material'' to more closely align with the definitions in TS–R–1 and in the NRC regulations.

We proposed slight modifications in the definition of ''package'' to replace ''Industrial package Type 1 (IP–1) . . . (IP–2) . . . (IP–3)'' with ''Industrial package Type 1 (Type IP–1) . . . (Type IP–2) . . . (Type IP–3).'' However, as Lawrence Laude and USEC noted, we introduced an error, repeating the word ''together'' under ''Industrial package.'' We are now correcting that error and changing only the references to package types.

We are revising the definition of ''radiation level'' to clarify the types of radiation that contribute to the radiation level, stating that it consists of the sum of the dose-equivalent rates from all types of ionizing radiation present including alpha, beta, gamma, and neutron radiation. Energy Solutions claimed this is inapplicable and overly burdensome when applied to container/conveyance release surveys. We do not use the term ''release survey'' in the regulations as DOT does not regulate the transfer of radioactive materials from control while ''radiation level'' limits are given in §§ 173.441 and 173.443. The commenter claims that alpha emitting radionuclides are not a contributor to external radiation dose equivalent and are already addressed in the removable surface contamination limits prescribed in the rule; he also claims that low-energy beta emissions should not be of concern and that it is not possible to accurately quantify beta dose at very low levels. We agree that for a large majority of radioactive packages, gamma or neutron radiation is the only significant contributor to dose at one meter from the surface of the package and although low energy beta emissions are typically more difficult to measure or might contribute little or even nothing to the radiation level, it is still possible and appropriate to measure their contribution, or the absence of any contribution, in order to ensure radiological safety.

However there are a few packages where neutrons must be considered (as noted in the current definition), and alpha and beta radiation should also be considered in meeting the regulatory requirements. The commenter proposed a new definition of ''Release Survey Effective Radiation Dose Equivalent;'' we do not believe such a term is needed.

We are revising the definition of ''uranium'' to include natural uranium that has not been chemically separated from accompanying constituents. Lawrence Laude said we should consider deleting ''(which may be chemically separated)'' as unnecessary. While this is true, we prefer to leave the words in for clarification.

B & W suggested we also change the § 173.403 definition of ''low toxicity alpha emitters'' to be consistent with the NRC and IAEA definitions. However, we did not propose such a change in the NPRM. We may consider changing the definition in a future rulemaking.

USEC suggested that we add a definition of ''overpack'' to § 173.403 specifically for radioactive material, separate from the definition of ''overpack'' in § 171.8. While the definition in § 171.8 is different than the definition in the TS–R–1 we do not see a need for change at this time. We did not propose such a change in the NPRM and believe that multiple definitions within the regulations are unnecessary.

Section 173.410

This section describes general design requirements for packages used to ship Class 7 (radioactive) materials. In paragraph (i)(3), we are revising the requirement for transporting liquid Class 7 (radioactive) material by air to specify that the package must be capable of withstanding, without leakage (i.e., without release of radioactive material), a pressure differential of not less than the ''maximum normal operating pressure'' (defined in § 173.403) plus 95 kPa (13.8. psi). The HMR currently require a package to be capable of withstanding a pressure differential of not less than 95 kPa. We are adding the maximum normal operating pressure (defined in § 173.403) to account for the contribution of internally generated gas pressure to the overall pressure differential.

USEC suggested we change ''13.8 psi'' to ''13.8 psia.'' We are not making this change, because ''psi'' is consistent with similar usage in § 173.27 and other sections of the HMR. Furthermore, the differential pressure may be either absolute or gage pressure, as long as both points are measured in the same units.

Section 173.411

Section 173.411 provides transportation requirements for industrial packagings. We are making several editorial revisions to improve consistency with the nomenclature used for package types, and to clarify the meaning of two authorized alternatives to Type IP–2 or IP–3 packages. We are replacing the word ''packaging'' with ''package'' in each place it appears in this section. We are also replacing the terms IP–1, IP–2, and IP–3 with Type IP–1, Type IP–2, and Type IP–3 to make the designations for industrial packages more consistent with the language used in the HMR for other Class 7 (radioactive) material package types, such as Type A and Type B(U).

We proposed modifying the requirement that tests for Type IP–2 and Type IP–3 packages must not result in a significant increase in the external surface radiation levels, with wording to indicate that the package tests must not result in more than a 20% increase in the maximum radiation level at any external surface of the package, consistent with the § 173.411 requirements for tank containers, tanks, freight containers, and metal intermediate bulk containers that are used as Type IP–2 or Type IP–3 packages. Penn State and Lawrence Laude stated that the 20% criterion could be difficult to meet for low-dose-rate packages. Regulatory Resources questioned the need for change as we had not previously adopted the IAEA approach. Regulatory Resources claimed there is already a quantified external package surface dose rate increase limit in § 173.441. However, that section provides the upper limits on allowable dose rates, whereas this criterion relates to the ability of the package design to maintain its shielding effectiveness in normal conditions of transport. Lawrence Laude stated that the proposed change would necessitate a review of all designs in domestic use and would entail large costs for little benefit. We agree that compliance with the 20% criterion could be burdensome for very low-dose-rate packages and that consideration needs to be given to use of previously allowable packages. Due to the issues raised we are not adopting the change to 20% at this time. However, we are not deleting the existing requirements in § 173.441 for tanks, freight containers, and intermediate bulk containers to meet the 20% limit and are revising the language in § 173.411 to be consistent with TS–R–1.

For consistency with the language in TS–R–1, in § 173.411(b)(4) we are replacing the phrases in paragraphs (b)(4), (b)(5), (b)(6) and (b)(7), ''designed to satisfy'' or ''designed to conform to'' certain requirements with the words, ''meet'' or ''designed to meet.'' In the NPRM we proposed to use the term ''satisfy,'' but after further consideration we believe it is clearer and simpler to instead replace the phrases in question with ''meets,'' which is also consistent with the language in TS–R–1.

USEC suggested that in both existing § 173.411(b)(4)(iii) and in proposed § 173.411(b)(5)(ii) we indicate ''38.4 psia,'' rather than ''37.1 psig'' as the U.S. standard or customary unit

equivalent to 265 kPa. We agree and are making these changes.

In § 173.411(b)(5) we are removing references to DOT Specification IM–101 and IM–102 steel portable tanks as Type IP–2 or IP–3 packages because they are no longer listed in Part 178 of the HMR and authorization for their use terminated on January 1, 2010 (although their use would still be permitted if it can be shown that they meet the requirements of § 173.411(b)(4)). We are revising § 173.411(b)(5) to contain the TS–R–1 requirements for cargo tanks and tank cars.

In paragraph (c), we are extending the retention period for Type IP–2 and Type IP–3 package documentation from one year to two years after the offeror's latest shipment, to correspond to the minimum period an offeror is required to retain copies of shipping papers. Regulatory Resources noted that the shipper of a package may not be the manufacturer of the package; in these instances, the commenter suggested that the documentation requirements should be placed on the manufacturer rather than the user/shipper. However, since Part 173 only applies to shippers, any requirement on manufacturers would need to be placed in Part 178. Furthermore, we are not introducing a new documentation requirement here, but only extending the required retention period. The commenter also suggested a delayed compliance timeframe to allow use of existing documentation requirements. We feel that this provision can be met by the delayed compliance date of this rule.

Section 173.412

This section prescribes additional design requirements for Type A packages. We are changing § 173.412(f) to require the containment system of a Type A package to be capable of retaining its contents under the reduction of ambient pressure to 60 kPa (8.7 psi) instead of the current 25 kPa (3.6 psi). Lawrence Laude expressed support for the change on the ground that it was more representative of the reduced pressures that could be experienced in ground transportation. J.L. Shepherd asked whether we would require the retesting of current Type A packages or provide a transition period. PHMSA believes that since packages currently have to withstand a reduction in ambient pressure from 100 kPa to 25 kPa, they should already be able to meet the new requirement (the old requirement was to withstand a reduction of 75 kPA (100 to 25 kpa), but now a reduction of only 40 kPa (100 kPa to 60 kPa) will be required). USEC suggested that we should use 8.7 psia instead of 60 kPa for clarity; we agree and have made this change.

We proposed revising § 173.412(j)(2) to specify that the maximum radiation level at the external surface of the package not increase by more than 20%. We received multiple comments on this proposal similar to those on the change proposed in § 173.411; as discussed above, due to the issues raised we are not adopting the change to 20% at this time.

Paragraph (k)(3) sets forth requirements for the retention of liquid contents in a Type A package. To provide further clarity, we are adopting the revised wording in TS–R–1, which states that a packaging designed for liquids must ''Have a containment system composed of primary inner and secondary outer containment components designed to enclose the liquid contents completely and ensure their retention within the secondary outer component in the event that the primary inner component leaks.''

Section 173.415

This section discusses authorized Type A packages. We proposed to extend the retention period for Type A package documentation from one year to two years after the offeror's latest shipment, to correspond to the minimum period for which an offeror is currently required to retain copies of shipping papers. We also proposed to include more detailed language describing the kinds of information expected to be included as part of the Type A package documentation.

While we received support from some commenters for the two-year retention period, Lawrence Laude requested that there be a delayed compliance period to accommodate shipments made more than one year prior to the effective date of the final rule and for which the documentation is no longer available. Several commenters (Veolia, J. L Shepherd, Lawrence Laude, and Penn State) expressed concern that current Type A package documentation would not meet the new requirements, and that any new requirements would invalidate the use of such packages until the documentation could be developed. Several commenters (Veolia, J. L Shepherd, Lawrence Laude, and Penn State) suggested a phase-in period be authorized for Type A packages currently in use until additional detailed documentation is available.

We agree that there may be a need for a transition period until the two-year retention period takes effect. We also agree that time may be needed to review and upgrade documentation. Therefore, we are not requiring compliance with the revised documentation requirements until January 1, 2017.

Veolia stated that the offeror of a Type A package should be able to use additional shielding or packing materials inside that package beyond that described in the package's documentation. We disagree. The current regulations require the packaging to be tested ''as normally prepared for transport'' which means shielding must be considered; additional shielding could change how the package performs and thus would need to be evaluated.

Penn State stated that providing engineering drawings of a package for a one-time-only shipment would increase the cost from negligible to significant with no added benefit and suggested that minimal documentation was required in such instances. However, the current regulations require even single use packages to be appropriately evaluated and documented. We agree that for some packages, engineering drawings may not be necessary, so we are not requiring engineering drawings in this final rule.

QSA Global and Penn State noted that in some instances, such as when a manufacturer ships a Type A package to a customer and the customer subsequently uses the package, following the manufacturer's instructions for the evaluated contents, the customer should be able to rely upon a certification from the manufacturer. Examples given include radiopharmaceuticals, sealed sources, instruments and gauges. In such instances, the shipper complies with the package assembly and closure instructions provided by the package manufacturer without modifying the design of the package system or contents except as authorized by the manufacture (e.g., various sources authorized for a given packaging system). It should be noted that under the existing requirements of § 173.415, the offeror must maintain the complete documentation.

QSA Global stated that full Type A package documentation files for reusable containers can be thousands of pages in length and contain information considered proprietary and confidential. The company currently maintains documentation on numerous packages used for Type A transport, and claims to provide sufficient information to ensure that users are aware of limitations associated with content, form and weight. The company also notes that there are hundreds of users of their Type A package designs, and recommended that shippers of Type A specification packages be required to

maintain package assembly instructions and obtain a Type A specification certification for the package from the packaging manufacturer.

Under the existing § 178.350, the term ''packaging manufacturer'' means the person certifying that the package meets all requirements of that section, which can often be the offeror, especially if the packaging or contents have been altered from that evaluated by another party. However, we agree that there are instances where the offeror is provided a packaging from another source for a particular set of contents and should not be considered to be the packaging manufacturer. Therefore, as an optional alternative to the current and revised requirement for offerors to maintain complete package documentation we are also including an option for offerors who receive a packaging from another party acting as the manufacturer, to rely on a manufacturer's certification. This certification would include a signed statement from the manufacturer affirming that the package meets all the requirements of § 178.350 for the radioactive contents presented for transport. This alternative creates no obligation on manufacturers to supply such a certification; it is merely an option available if an offeror is able to obtain the certification from the manufacturer. In such instances, the offeror will also be required to maintain a copy of the manufacturer's certification, and if requested by DOT, be able to obtain a copy of the complete documentation from the manufacturer. However, if the offeror has modified the packaging or contents from that evaluated and documented by the other party, the offeror must perform an evaluation of the changes and then maintain the complete documentation which must be provided to DOT on request. This will enable users to reuse packagings expressly made for certain contents and rely on documentation from another party acting as the manufacturer, but does not allow them to modify the packaging or contents without a documented evaluation of those changes.

Section 173.416

This section discusses authorized Type B packages. We are removing the present paragraph (c), which allowed the continued use of an existing Type B packaging constructed to DOT specification 6M, 20WC, or 21WC until October 1, 2008, and replacing it with a new paragraph (c) to authorize the domestic shipment of a package conducted under a special package authorization granted by the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 71.41(d). That NRC provision is only applicable to limited, one-time shipments of large components that cannot be shipped inside a certified package, or for which designing a packaging would be impracticable due to their large size.

J. L. Shepherd requested that we maintain reference to the obsolete specification packages to allow continued use of those packages under special permits, but removal of this paragraph would have no impact on any such special permits. Lawrence Laude requested that we specify what proper shipping name should be used for packages authorized by this new paragraph. In the rulemaking establishing 10 CFR 71.41(d), the NRC stated that, for a package approved under that paragraph, the NRC will issue a Certificate of Compliance or other approval (i.e., special package authorization letter). In those cases where the NRC issues a certificate, the proper shipping name will be associated with the certificate (e.g., ''Radioactive material, Type B(M) package, *non-fissile or fissile-excepted*). In instances where the NRC issues a special package authorization letter, the proper shipping name will be ''Radioactive material, transported under special arrangement, *non-fissile or fissile-excepted*''.

Section 173.417

This section discusses authorized fissile materials packages. We are removing the present paragraph (c), which allows the continued use of an existing fissile material packaging constructed to DOT specification 6L, 6M, or 1A2 until October 1, 2008. We are also removing the references to 20 PF and 21PF overpacks in paragraphs (a)(3), (b)(3),and (b)(3)(ii) in Table 3 because those overpacks are no longer in service.

We are adding a new paragraph (c) to authorize the domestic shipment of a package conducted under a special package authorization granted by the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 71.41(d). Lawrence Laude requested that we specify what proper shipping name should be used for packages authorized by this new paragraph. In those cases where the NRC issues a certificate, the proper shipping name will be associated with the certificate (e.g., ''Radioactive material, Type B(M) package, fissile). In instances where the NRC issues a special package authorization letter, the proper shipping name will be ''Radioactive material, transported under special arrangement, fissile.''

Section 173.420

Section 173.420 sets forth requirements for uranium hexafluoride (fissile, fissile excepted and non-fissile). We are removing and reserving paragraph (a)(2)(ii), which refers to specifications for DOT–106A multi-unit tank car tanks as these multi-unit tank car tanks are not used, nor planned to be used for transporting UF_6.

We had proposed to add the specification 30C package to the table in § 173.420(a)(2)(iii)(D). However, as USEC pointed out, the 30C cylinder is not a Section VIII ASME pressure vessel but is an ANSI N14.1 packaging. Therefore, we are not adding it to the table.

USEC suggested that in 173.420(a)(3)(i) we should change ''200 psi'' to ''200 psia'' and in 173.420(a)(6) we should change ''14.8 psig'' to ''14.7 psia''. For the first reference, the ANSI standard referenced in this section uses psig, not psia, thus we are not adopting the suggested change, but are changing it to ''200 psig'' instead. We do agree with the second suggestion as these packages are required to be shipped with an internal pressure less than atmosphere, and so we are adopting this change.

We proposed adding a paragraph (e) to require that, when there is more than one way to describe a UF_6 shipment, the proper shipping name and UN number for the uranium hexafluoride should take precedence (e.g., the uranium hexafluoride shipping description should take precedence over the shipping description for LSA material). Lawrence Laude noted that while the bullet-list summary of changes in the NPRM stated that this change would apply only to shipments of 0.1 kg or more of UF_6, our later discussion and draft text applied the change to all quantities. Lawrence Laude and USEC requested that this paragraph only apply to packages with 0.1 kg or more of UF_6, allowing small packages of uranium hexafluoride to be re-classed as Class 8 in accordance with § 173.423. We note that because we are harmonizing with the 2009 edition of the IAEA regulations, and this point has been raised regarding interpretation of the corresponding paragraph in TS–R–1, we will limit application of this paragraph to packages of 0.1 kg or more of UF_6. As the IAEA is working to clarify application of this requirement to packages of less than 0.1 kg of UF_6, we may consider changes to this requirement in a future rulemaking.

Section 173.421

This section outlines requirements for excepted packages for limited quantities of Class 7 (radioactive) materials. Presently, § 173.421(b) permits excepted packages of limited quantities of radioactive material that are a reportable quantity of hazardous substance or waste to be shipped without having to comply with § 172.203(d) or § 172.204(c)(4). We are extending this relief from these shipping paper requirements to all excepted packages that are a hazardous substance or waste by removing § 173.421(b) and adding the exclusion from §§ 172.203(d) and 172.204(c)(4) to § 173.422.

Section 173.422

Section 173.422 sets forth additional requirements for excepted packages containing Class 7 (radioactive) materials. PHMSA is revising the introductory text to specify that a small quantity of another hazard class transported by highway or rail (as defined in § 173.4) that would otherwise qualify for shipment as a Class 7 (radioactive) material in an excepted package must also satisfy the requirements of § 173.422. Lawrence Laude suggested that we also add excepted quantities as defined in § 173.4a. However such packages are currently covered by § 173.4a(a)(3).

As noted above, § 173.421(b) currently permits excepted packages of limited quantities of radioactive material that are a hazardous substance or hazardous waste to be shipped without having to comply with § 172.203(d) or § 172.204(c)(4). We are extending this relief from shipping paper requirements to include those excepted packages that contain a hazardous substance or hazardous waste by moving the exclusion from § 172.203(d) and § 172.204(c)(4) provisions to § 173.422(e). In the discussion in our NPRM, we stated that we were proposing to add an exclusion from § 172.202(a)(5) for such packages; however, in the draft of the regulatory text we referenced § 172.202(a)(6) instead. Lawrence Laude suggested that we should include both paragraphs; we agree and are including both.

We are also adding to § 173.422(a) a requirement that all excepted packages whose contents meet the definition of a hazardous substance, be marked with the letters ''RQ''. This will provide consistency with existing marking requirements for a package containing a hazardous substance. Lawrence Laude and Regulatory Resources noted that to be consistent with § 172.324, this should only apply to non-bulk excepted packages, we agree and have made that change.

Section 173.423

Section 173.423 prescribes requirements for multiple hazard limited quantity Class 7 materials. Lawrence Laude suggested several changes to § 173.423. However, as we did not propose any changes to that section in the NPRM, we are not adopting his proposals in this final rule.

Section 173.427

This section prescribes transport requirements for low specific activity (LSA) Class 7 (radioactive) material and surface contaminated objects (SCO). In the introductory paragraph of § 173.427(a), we are changing the phrase ''LSA material and SCO . . . must be packaged'' to ''LSA material and SCO must be transported.'' This should help clarify that paragraphs (c) and (d) apply to subcategories of LSA material or SCO, specifically unpackaged LSA material or SCO, and LSA or SCO which require packaging in accordance with NRC requirements in 10 CFR 71. NIRS and CACC opposed provisions in the proposed changes that remove packaging requirements for some SCO; however, this is a misunderstanding of these changes as no packaging changes were proposed. Lawrence Laude noted that for consistency, § 173.427(a)(2) should read ''LSA material and SCO'' instead of ''LSA and SCO material,'' and we are adopting that correction.

In § 173.427(a)(6)(v), we are removing the placarding exception for shipments of unconcentrated uranium or thorium ores. The increased communication requirement is intended to compensate for the fact that packaging requirements are minimal for these materials. We are also clarifying that all of the placarding requirements of subpart F of part 172 must be met by rewording this paragraph from referring to vehicle placarding, to requiring appropriate placarding of the shipment.

In § 173.427(a)(6)(vi), we proposed to require that when LSA material or SCO are shipped in accordance with that paragraph and contain a subsidiary hazard from another hazard class, § 172.402(d) labeling requirements for the subsidiary hazard would apply. Presently, § 173.427(a)(6)(vi) excepts such shipments from all marking and labeling requirements, other than for the stenciling or marking as ''RADIOACTIVE—LSA'' or ''RADIOACTIVE—SCO,'' as appropriate. Lawrence Laude noted that it is unclear how labels would be applied to unpackaged material, how many labels would be required, and whether labels or placards would be required for bulk packages with a volumetric capacity greater than 18 m^3 (640 ft^3). The commenter also claimed the proposed change has the potential for conflicting with the proposed change to § 172.402(d)(1) regarding not requiring subsidiary labels for Class 7 packages with subsidiary hazards meeting the requirements of §§ 173.4, 173.4a, and 173.4b. While this change cannot conflict with the new § 172.402(d), to which paragraph (a)(6)(vi) makes reference, the concerns on labeling of unpackaged material are valid. Therefore, we are amending this change to apply only to packaged material; for larger bulk packages, labels or placards could be used as required in § 172.400.

Lawrence Laude further claimed that portions of the proposed (and existing) § 173.427(a)(6) are either redundant or inconsistent with other requirements of subpart I and recommended that paragraphs (a)(6)(i) through (v) be deleted, that only paragraph (a)(6)(vi) be retained, and that paragraph (a)(6)(vii) be moved to a new paragraph (b)(6) or, alternately, a new paragraph (f). However, § 173.427(a)(6) does contain some unique requirements, and the changes suggested would be beyond the scope of what was proposed in the NPRM, so we are not adopting them.

We are revising paragraph (b)(1) to replace ''IP–1, IP–2, or IP–3'' with ''Type IP–1, Type IP–2, or Type IP–3,'' to coincide more closely with the IAEA nomenclature in TS–R–1.

In the NPRM we proposed to rearrange the wording in paragraph (b)(4), to indicate that for an exclusive use shipment of less than an A_2 quantity, the packaging must meet the requirements of § 173.24a or § 173.24b, depending on whether the packaging would be considered non-bulk or bulk according to the definition in § 171.8. Lawrence Laude noted that the reference to §§ 173.24a and 173.24b is redundant since the introductory text of § 173.410, which is also referenced, includes a requirement to meet subparts A and B of part 173, and §§ 173.24a and 173.24b are included in subpart B. We agree and are revising this paragraph to reference only § 173.410. Lawrence Laude also commented that we should address issues related to bulk Type A and Type B packages. However, we did not propose such changes in the NPRM.

In paragraph (b)(5), we are withdrawing the explicit authorization for certain DOT Specification tank cars and cargo tanks, and replacing it with the general authorization for use of portable tanks, cargo tanks and tank cars as provided in § 173.411. The previously authorized DOT

Specification tank cars and cargo tanks are seldom used and the § 173.411 requirements provided by this rulemaking offer a broader range of options.

In § 173.427(c)(3), we are changing the phrase ''where it is suspected that non-fixed contamination exists'' to ''where it is reasonable to suspect that non-fixed contamination exists'' to clarify that the shipper must have a justifiable reason if it decides that it is not necessary to take measures to ensure that contamination from SCO–I is not released into the conveyance or the environment.

We proposed adding a new paragraph (c)(4) to require that when unpackaged LSA–I material or SCO–I required to be transported as exclusive use is contained in receptacles or wrapping materials, the outer surfaces of the receptacles or wrapping materials must be marked ''RADIOACTIVE LSA–I'' or ''RADIOACTIVE SCO–I'' as appropriate. We proposed an additional new paragraph (c)(5) to require that all highway or rail conveyances carrying unpackaged SCO–I be placarded. USACE noted that paragraph (c)(4) would not provide hazard communication when a liner is shipped inside a transport vehicle (e.g. rail gondola) or an intermodal container and suggested that the outside of the transport vehicle and/or the receptacle or intermodal container would be the only place the marking should be required. We agree that the proposed markings could be obscured and we note that conveyance marking is already covered by § 173.427(a)(vi); hence we are not including this suggestion in the final rule. Lawrence Laude suggested that for consistency with other usage, the proposed § 173.427(c)(5) should refer to ''transport vehicle'' rather than ''highway or rail conveyance.'' However, conveyance includes freight containers, which sometimes need to be placarded. Lawrence Laude also asked for clarification that the placarding requirement of paragraph (c)(5) applies to non-exclusive use shipments of SCO–I made in accordance with paragraph (c)(2), whereas for other LSA material and SCO shipments, placards are only required for exclusive use shipments. Mr. Laude is correct, in this final rule, the placarding required in paragraph (c)(4) would only apply to exclusive use shipments, except for those SCO–I non-exclusive use shipments cited in paragraph (c)(2).

We are modifying Table 5 by adding a separate column for conveyances traveling by inland waterways, in which the authorized activity limits for combustible solids, liquids and gases of LSA–II and LSA–III and SCO would be 10% of those for other types of conveyances. NIRS & CACC asserted that this change could weaken existing regulations and opposed a change. However, these are newly added and more restrictive requirements so they do not ''weaken'' the regulations. In Table 6, we are replacing the terms IP–1, IP–2, and IP–3 with Type IP–1, Type IP–2, and Type IP–3 to be consistent with the similar changes made in § 173.411.

Section 173.433

Section 173.433 sets forth requirements for determining radionuclide values, and for listing radionuclides on shipping papers and labels. In the NPRM, we proposed to revise paragraphs (b), (c), (d)(3), and (h) Tables 7 and 8.

We are revising paragraph (b) to clarify the use of line 3 in Tables 7 and 8 when no relevant data are available. Currently, paragraph (b) allows use of Table 7 for values of A_1 and A_2 and Table 8 for exemption values when the individual radionuclides are not listed in §§ 173.435 or 173.436. Tables 7 and 8 also indicate values that may be used when ''No relevant data are available,'' but there is no reference in the text to when those entries may be used.

We are revising paragraph (c)(1) to conform to the current wording in TS–R–1 that ''it is permissible to use an A_2 value calculated using a dose coefficient for the appropriate lung absorption type.'' We are also adding language to paragraph (c) to clarify that this method of calculation only applies to the alternative specified in paragraph (b)(2), which requires approval by the Associate Administrator, or for international transportation, multilateral approval from the appropriate Competent Authorities.

We are revising paragraph (d)(3) to correct incorrect references to other paragraphs. Currently, the explanation of the symbols in paragraph (d)(3) refers to paragraph (d)(2) and itself. We are revising it to refer to paragraphs (d)(1) and (d)(2).

We are modifying the second category descriptions in both Tables 7 and 8, which presently read ''Only alpha emitting nuclides are known to be present.'' To conform as nearly as possible to the current wording in TS–R–1, we are replacing the current wording with ''Alpha emitting nuclides, but no beta, gamma, or neutron emitters, are known to be present'' (in Table 7), and ''Alpha emitting nuclides, but no neutron emitters, are known to be present'' (in Table 8).

In Table 7 we are also adding a footnote for the case when alpha emitters and beta or gamma emitters but no neutron emitters are known to be present. The reason for this footnote is that the IAEA default A_1 value for the case when alpha emitters are known to be present is larger than the value when only beta or gamma emitters are known to be present; the footnote entry clarifies that if both alpha and beta or gamma emitters are present, the lower default A_1 value should be used. The lesser A_1 default value that would be prescribed in this case would be the more logical and conservative choice. The third category presently reads ''No relevant data are available,'' we are replacing it with ''Neutron emitting nuclides are known to be present or no relevant data are available.'' The revised wording clarifies that if there are different default values for different types of radiation, the smaller, most conservative value for the types of radiation known to be present should be used. Regulatory Resources questioned how an A_1 value can be assigned when there are no relevant data concerning the nuclide(s); it is done by assigning a value that is equal to the lowest entry for nuclides listed in the table in § 173.435.

Section 173.435

This section contains the table of A_1 and A_2 values for the most commonly transported radionuclides. We are revising the table as follows:

- In the entry for Cf-252, in column 1, the reference to footnote (h) is removed, and in columns 3 and 4, the A_1 value is revised (this adopts the new TS–R–1 value for A_1, which is the same as previously allowed by domestic exception in footnote (h) and eliminates the domestic exception for A_2);
- A_1 and A_2 values and the intrinsic specific activity for Krypton-79 (Kr-79) are added to the table; the A values were calculated using the Q system, and added to TS–R–1 in its 2009 edition, and the specific activity calculated from the relation specific activity in Bq/g = 0.693 times Avogadro's number divided by the half-life in seconds times the atomic mass; and
- In the footnotes to the table, footnote (a) is revised to add a reference to TS–R–1 Table 2's list of daughter products, footnote (c) is revised to clarify that the comparison of ''output'' activity to the A-values is restricted to special form sources of Ir-192, and footnote (h) is removed for the Cf-252 entry, as discussed above, and reserved.

NIRS and CACC said they oppose weakening of definitions and increases in exemption levels. However, these are not changes to exemption levels but are corrections and clarifications.

Regulatory Resources suggested that the tables in §§ 173.435 and 173.436 be

combined into a single table. We prefer to keep the current format in order to maintain all the current content without reducing readability.

Section 173.436

This section contains exempt material activity concentrations and exempt consignment activity limits for radionuclides. To reflect corresponding changes in TS–R–1, we are revising the total consignment activity exemption for Tellurium-121m (Te-121m), from 1×10^5 Bq to 1×10^6 Bq, and we are adding an entry for Krypton-79 (Kr-79). We are also revising the list of parent nuclides and their progeny listed in secular equilibrium in footnote (b) to the table. The chains for parents Cerium-134 (Ce-134), Radon-220 (Rn-220), Thorium-226 (Th-226), and Uranium 240 (U-240) are removed. We are adding an entry for Silver-108m (Ag-108m).

Section 173.443

This section prescribes contamination control provisions. Paragraph (a) provides that the level of non-fixed contamination ''must be kept as low as resonabl[y] achievable'' and specifies alternative methods for determining the level of non-fixed contamination, which may not exceed certain permissible limits. The remaining paragraphs of § 173.443 address situations under which a higher level of non-fixed contamination is allowed;

- When a closed transport vehicle is used only for transportation by highway or rail of Class 7 (radioactive) material, the contamination level on the package may be as great as ten times the applicable limit specified in paragraph (a) if (1) a survey shows that the radiation dose rate at any point does not exceed specified values; (2) the outside of the vehicle is stenciled on both sides with the words ''For Radioactive Materials Use Only'' at least three inches high; and (3) the vehicle is kept closed excluding loading or unloading.
- Alternatively, if a package is transported as an ''exclusive use'' shipment by rail or highway, the level of non-fixed contamination on a package during the course of transportation may be as much as ten times the applicable limit specified in paragraph (a) so long as:
  - ○ At the beginning of transport, the level of non-fixed contamination on the package does not exceed the applicable limit set forth in paragraph (a); and
  - ○ the transport vehicle is surveyed and is not returned to service until the radiation does rate at each accessible surface does not exceed a specified value and there is no significant removable (non-fixed) surface contamination.

Paragraph (a)

The alternative methods for determining the level of non-fixed contamination are currently set forth in paragraphs (a)(1) and (2). In the NPRM, we proposed to redesignate these two paragraphs as paragraphs (a)(1)(i) and (a)(1)(ii), respectively, and provide in new paragraph (a)(2) that a ''conveyance used for non-exclusive use shipments is not required to be surveyed unless there is reason to suspect that it may exhibit contamination.'' We also proposed to apply the existing requirement that the level of non-fixed (removable) radioactive contamination on the external surfaces of each package be kept as low as reasonably achievable on the external and internal surfaces of an overpack, freight container, tank, intermediate bulk container (IBC), or conveyance—but not to the internal surfaces of a conveyance, freight container, tank or IBC dedicated to the transport of unpackaged radioactive material in accordance with § 173.427(c) and remaining under that specific exclusive use. This change ensures that any associated transportation equipment utilized for transportation does not exhibit excessive levels of non-fixed (removable) radioactive contamination and aligns the domestic contamination control requirements with international standards in TS–R–1.

In response to comments from Lawrence Laude and Regulatory Resources that the contamination levels should not apply to the interior surfaces of packages, we are clarifying that the contamination control requirements in paragraph (a) do not apply to the interior surfaces of (1) a tank, intermediate bulk container or other ''package,'' or (2) a conveyance or freight container dedicated to the transport of unpackaged LSA–1 material and SCO–1 in accordance with § 173.427(c) and remaining under that exclusive use.

In Table 9, which is referenced in the new § 173.443(a)(1)(i), we are changing the contamination limits in the column labeled dpm/cm² from 220 to 240 for contamination due to beta and gamma emitters and low toxicity alpha emitters, and from 22 to 24 for contamination due to all other alpha emitting nuclides, respectively. This will provide the correct conversions from the 4 and 0.4 Bq/cm² values. Lawrence Laude also raised additional concerns with our proposed changes to § 173.443(a):

- Mr. Laude inquired whether we should adopt any limit on fixed contamination, because we only addressed non-fixed contamination. We do not believe it is necessary or practical to impose fixed contamination limits on conveyances, overpacks, or freight containers being used for radioactive material transport, as radiation levels from the Class 7 material would make this practice difficult and unduly expensive, if not impossible to implement. It would also be unnecessary since the other transport controls for the declared hazard of the packaged or unpackaged radioactive material provides sufficient protection. Moreover, once these conveyances, overpacks, or freight containers are no longer used for transport of Class 7 material, they become subject to the HMR independently for possible radioactive material classification to address any possible fixed contamination hazard.
- Mr. Laude inquired whether the first sentence of the proposed paragraph (a)(1) should be limited to conveyances to be consistent with § 173.427(c), which prescribes requirements for shipping LSA–I and SCO–I in conveyances. However, a freight container can also be used in accordance with § 173.427(c) and should be subject to these requirements. Any requirement to measure non-fixed contamination on the internal surface of a tank or IBC is addressed by our change to the introductory language of paragraph (a).
- Finally, Mr. Laude inquired whether paragraph (a)(2) should apply to overpacks as well as conveyances. While this seems possible, we consider this change unnecessary because we are addressing the misconception that conveyances used for non-exclusive use transport were required to be routinely surveyed for contamination.

Paragraph (b)

Section 173.443(b) currently allows non-fixed radioactive contamination limits on a package to be up to ten times the limits in § 173.443(a) during exclusive use shipments by rail or highway, if the initial contamination is no greater than the § 173.443(a) limits. We proposed to apply this exception to the external and internal surfaces of conveyances, overpacks, freight containers, tanks, and IBCs, in addition to the external surfaces of each package. This ensures that any radioactive substances on the associated items utilized during transportation do not exceed the designated upper limits for non-fixed (removable) radioactive contamination of the package during transport.

In response to comments from Lawrence Laude and Regulatory

Resources, we are removing the reference to the ''internal surfaces'' of tanks and IBCs from the proposed § 173.443(b) because they are covered by the term ''package.'' However, we disagree that the reference to tanks and IBCs should be removed from the ''return to service'' provisions in § 173.443(c), which should be applicable to tanks and IBCs. And we do not find any inconsistency with the provisions in § 173.428 on the transport of empty Class 7 (radioactive) packagings.

Paragraph (c)

In paragraph (c), we proposed to replace the phrase ''returned to service until the radiation dose at each accessible surface'' is at a specified level with ''returned to Class 7 (radioactive) materials exclusive use transport service, and then only for a subsequent exclusive use shipment utilizing one of the above cited provisions, unless the radiation dose rate at each accessible surface'' is at that specified level. Under this proposal, with limited exceptions provided by §§ 173.443(a) and (d), a conveyance, freight container, overpack, tank, or intermediate bulk container used for exclusive use transport of radioactive materials under §§ 173.427(b)(4), 173.427(c), or 173.443(b) would need to be surveyed with appropriate radiation detection instruments. These conveyances, freight containers, overpacks, tanks, or intermediate bulk containers would have to exhibit a radiation dose rate no greater than 0.005 mSv per hour (0.5 mrem per hour) at any accessible surface, and non-fixed radioactive surface contamination no greater than the limits in § 173.443(a), in order to continue to be used for one of the following specified Class 7 (radioactive) materials exclusive use transport scenarios:

(1) The use of the packaging exception for less than an A_2 quantity authorized in § 173.427(b)(4);

(2) The use of the authorization in § 173.427(c) to ship unpackaged LSA–I and SCO–I; or

(3) The use of the authorization in § 173.443(b) to ship packages that may develop increased contamination during transport up to ten times the normal package limits, so long as the package meets the non-fixed contamination limits at the beginning of transport.

The procedure described in § 173.443(c) would not be applicable, and would in fact generally be prohibited, for unrestricted return to general service of the item or conveyance. The rationale for this proposed change in §§ 173.443(c), 174.715(a), 175.705(c), 176.715, and 177.843(a), is as follows:

(1) If this ''returned to service'' criterion were to be considered a criterion for unrestricted release following exclusive use transport of Class 7 (radioactive) materials, it would be providing a radioactive material unrestricted transfer (free release) limit, which DOT cannot authorize. DOT has authority only for the regulation of radioactive material while in transport. The clearance (unrestricted or free release) from regulatory control of radioactive materials for further use or disposal, or ownership, is subject to regulations of the Nuclear Regulatory Commission, NRC Agreement States or is effected pursuant to the control of the Department of Energy from their facilities (pursuant to the Atomic Energy Act of 1954, as Amended and the Energy Reorganization Act of 1974;

(2) Non-hazardous material, even foodstuffs, could be transported in contact with these items or conveyances, and an unacceptable health physics practice would result if these limits were construed to be a criterion for free release (i.e., for unrestricted radioactive material transfer);

(3) Adhering to the requirements for non-fixed contamination (no greater than the § 173.443(a) values) and radiation level (no greater than 0.005 mSv per hour, or 0.5 mrem per hour, at the surface of the vehicle) of § 173.443(c) would not provide sufficient protection for unrestricted transfer, considering that over time factors such as weathering could gradually convert any fixed contamination to non-fixed contamination; and

(4) Allowing the free release or unrestricted transfer of radioactive material at these levels would be incompatible with currently and generally accepted radiation protection practices.

USACE stated that the proposed rulemaking does not eliminate the confusion about ''contamination,'' especially for internal surfaces of conveyances, tanks, or intermediate bulk containers and whether they can be released from non-radioactive shipments. It also noted there are discrepancies concerning ''unrestricted release'' between PHMSA (in the HMR) and other Federal government agencies (in various guidance documents) and recommended that we consult with the NRC to develop ''unrestricted release'' criteria that would be applicable to both transport and transfer. While such a project may have merit, it would be beyond the scope of this rulemaking and could involve attempts to reconcile non-internationally accepted standards and/or U.S. standards that may be less restrictive or decades old. In this rulemaking, we are adopting the most recent international standards on contamination promulgated by the United Nations and the IAEA to be as consistent as possible with transport safety standards required by the rest of the countries in the world and facilitate international commerce.

Energy Solutions commented that the ''return to service'' provisions in revised paragraph (c) would create ambiguities, are contrary to the intent of the 1979 DOT and NRC memorandum of understanding, and are not compliant with Presidential Executive Orders 12866 and 13272, the Paperwork Reduction Act, the Unfunded Mandates Reform Act and ALARA mandates. The questions that Energy Solutions presented and our responses are as follows:

- Would a manifest be required when the package, conveyance, overpack, freight container, tank, or intermediate bulk container meets the return to service criteria, under the revised language? Since the exclusive use provision would continue to apply, at a minimum, the exclusive use requirements in § 173.403 would be applicable. The shipper must also classify and offer the material appropriate to the hazard, as applicable.
- What is the proper shipping name if the remaining material is exempt from Class 7 transport in accordance with § 173.436? If the remaining material can be demonstrated to be exempt from the regulations, then the HMR do not apply and therefore a proper shipping name is not necessary.
- How would the return to service requirements apply to various hypothetical situations, such as:
  - If a reportable quantity of radioactive material is being offered that is also exempt from the HMR in accordance with § 173.436. We do not know of a realistic scenario that could cause this situation to happen, but if the radioactive material can be demonstrated to be exempt from the HMR, then the HMR do not apply.
  - If the radioactive Class 7 hazard present is the subsidiary hazard of the material. We see no ambiguity; the return to service requirements criteria apply whether the radioactive material is the primary or subsidiary hazard.
  - If the conveyance returned to service under the proposed language remains under the control of the licensee or if it must be returned to a licensed facility? The material will need to be transferred in accordance with the

transfer license conditions of the shipper, which the DOT does not regulate.

○ If a closed transport vehicle meets the criteria in § 173.443(d) and is marked and placarded, would a manifest would be required and what proper shipping name should be used? The return to service requirements in paragraph (c) do not apply to a vehicle that meets the conditions in paragraph (d).

Overall, we disagree with Energy Solutions' position that the proposed rulemaking does not provide the clarification DOT seeks. We believe the proposed rulemaking clarifies possible longstanding misinterpretations on the distinction between transport and transfer of radioactive material and that the benefits realized for the public, transport workers and emergency responders far outweigh any possible disadvantages of the proposal.

We also disagree that this rulemaking is inconsistent with the 1979 Memorandum of Understanding or that it is not in ''the public interest.'' DOT and the NRC have advised and consulted with one another on this subject for a number of years and worked to clarify that return to service does not refer to, and cannot be interpreted to mean, unrestricted release or transfer. Class 7 accidental release statistics which the commenter referred to in the comments are not applicable in this case, because even if such accidents were to have occurred and no hazard communications were available, there would be no way of knowing such data should even be gathered because the human senses cannot detect radiation. Additionally, the possible detrimental scenarios need not be accident related, even weathering effects could possibly cause the spread of contamination, or as stated in the proposed rulemaking the contamination could be commingled with foodstuffs in subsequent transports, creating an unsatisfactory health physics practice.

Based on currently-accepted health physics theory, these revisions provide benefits to the public. Any data or documentation would be unrevealing, as there would be no deterministic health effects observed from low level contamination and any stochastic health effects would be equally difficult to observe empirically.

Similarly, we do not agree with Energy Solutions' arguments that this rulemaking fails to comply with the Executive Orders 12866 and 13271, the Unfunded Mandates Reform Act, and the Paperwork Reduction Act on the theory that the amendments proposed in the NPRM would result in a dramatic increase in operational costs of approximately 800–1,000% without any offsetting benefit or reduction in exposure to the public. Energy Solutions was the only entity to assert that there would be any increase in costs, much less the extreme increase it claimed. We consider that some relatively minor adaptation to new practices would enable return shipments of packages classified under a relatively lower Class 7 hazard category, such as an excepted package, and the regulatory benefits of modest transport requirements (primarily hazard communication provided to transport workers, emergency responders and members of the public) far outweigh the burden imposed.

Lastly, Energy Solutions recommended creating a new definition in § 173.403 for the term ''release survey effective radiation dose equivalent'' and additional rewording of § 173.443, as proposed in the NPRM, to provide ''relief from the unnecessary burdens and inaccuracies'' of the proposal. However, these recommended changes are beyond the scope of the proposals in this rulemaking.

Regulatory Resources expressed uncertainty over what the intention was for the proposed § 173.443(c) ''return to service'' criteria, but seemed to believe it applied primarily to packages. Our intention is unchanged, and we believe it is widely recognized that the basic contamination limits provided in § 173.443 will not typically lead to cross contamination of conveyances or any other items in contact with packaged radioactive material. For this reason, we do not require periodic radiation and contamination surveys related to non-exclusive use transport.

At the same time, we are clarifying the return to service criteria in this rulemaking, because regulatory relief in certain circumstances, such as provided by §§ 173.443(b), 173.427(b)(4), or 173.427(c), can possibly create cross contamination. For this reason, exclusive use provisions are needed, and return to service surveys are necessary, in order to mitigate and control the build-up of contamination levels in undesired locations when these provisions are utilized, while allowing flexibility and overall exposure reduction in these instances. As noted above, there seems to be some confusion that return to service standards can lead to a free release or unrestricted transfer situation, for which DOT does not have authority. Rather, exclusive use provisions may always be terminated when the items affected have been demonstrated to be no longer subject to the HMR or can be transported in accordance with provisions of the HMR that do not require contamination related exclusive use transport.

Paragraph (d)

In paragraph (d), we proposed to require placarding of closed transport vehicles used solely for the exclusive transportation by highway or rail of Class 7 (radioactive) material packages with contamination levels that do not exceed 10 times the package contamination limits prescribed in § 173.443(a). We proposed to add the qualifier ''exclusive use'' to ensure that the exclusive use requirements described under the definition of ''exclusive use'' in § 173.403 are satisfied for these shipments. In this paragraph, we are deleting the word ''packages'' to allow this paragraph to apply to unpackaged radioactive material, which will provide consistency with similar requirements found in paragraphs §§ 174.715(b) and 177.843(b).

Lawrence Laude suggested that § 173.443(d)(2) be changed to allow the words to be a ''marked'' rather than ''stenciled'' to allow flexibility. PHMSA accepts that there are several ways to appropriately mark the required information, and has amended the regulatory text to allow marking, with stenciling as an example.

Paragraph (e)

In paragraph (e), we proposed to add required actions for leaking or suspect Class 7 (radioactive) packages or unpackaged material, including immediate actions and assessments, protective requirements, recovery techniques, and prerequisites for continued transport. In response to the suggestions from Regulatory Resources, we are adding the words ''as applicable'' and changing the second sentence in the paragraph to read ''The scope of the assessment must include, as applicable, the package, the conveyance, the adjacent loading and unloading areas, and, if necessary, all other material which has been carried in the conveyance.''

Section 173.453

This section prescribes exceptions for fissile materials. In the NPRM we proposed inserting a phrase into § 173.453(d) that would allow a fissile material exception for uranium enriched in uranium-235 to a maximum of 1 percent by weight under the conditions stated there only if the material in question is essentially homogeneous. After consulting with the NRC on its upcoming rulemaking, we have decided to not make the proposed change at this

time. If the NRC changes the defining criteria for this radionuclide we will update in a future rulemaking.

Regulatory Resources suggested a reorganization of § 173.453(c) for clarity. However, this was not included in our NPRM and we find the existing language to be clear, so we are not adopting the suggested changes.

Section 173.465

This section sets out requirements for Type A packaging tests. In paragraph (a), we are adding a specific reference to the standard in § 173.412(j) for when a test for a Type A package is deemed to be successful. In § 173.465(d)(i), we are adopting the revised TS–R–1 language to clarify that the stacking test weight must be calculated using five times the maximum weight of the loaded package. USEC suggested that we reword this requirement to ''maximum allowable package weight,'' but we choose to keep the wording shown in our NPRM for consistency with TS–R–1.

Section 173.466

This section describes additional tests for Type A packagings designed for liquids and gases. In paragraph (a), we are adding a specific reference to the standard in § 173.412(k) for when a test for a Type A package designed for liquids or gases is deemed to be successful.

Section 173.469

This section describes tests for special form Class 7 (radioactive) materials. In paragraph (b)(2)(ii), we are replacing the word ''edges'' with the word ''edge'' since this refers to the edge of a flat circular surface.

In paragraph (b)(2)(iii), we are revising the units of measure and the thickness requirement for the lead sheet used for the percussion test from ''2.5 cm (1 inch) or greater'' to ''not more than 25 mm (1 inch)'' in thickness, which is consistent with the requirement in TS–R–1. USEC asked that there be a transition period for previously tested materials that might not meet the revised criteria. PHMSA expects minimal impact because alternative testing in accordance with ISO 2919 or IAEA requirements has been typically used to demonstrate compliance. If any special form certificate renewals are impacted, they will be evaluated on a case-by-case basis to allow for transition if necessary.

In paragraph (d)(1) we are adding an alternative to allow the use of the ISO 2919 Class 5 impact test as an alternative to the impact and percussion test if the mass of the special form material is less than 500 g, as this alternative was added to TS–R–1. Updated references to the 1999 edition of ISO 2919 are being added to paragraphs (d)(1) and (d)(2).

We are adding a provision in new paragraph (e) in § 173.469 to allow sources subjected to the ISO 2919 heat test before the effective date of this final rule to not have to be retested to the newer revision of ISO 2919 (i.e. ISO 2919–1999(E)) which is being incorporated by reference in this rulemaking.

Section 173.473

This section prescribes requirements for foreign made packages. We are revising § 173.473(a)(1) to update the reference to the 2009 edition of the IAEA standards for transportation of radioactive materials, TS–R–1.

Section 173.476

This section details the requirements for approval of special form materials. We are revising paragraph (a) to extend the retention period for special form documentation from one year to two years after the offeror's latest shipment, to coincide with the minimum retention period for shipping papers. In the NPRM we proposed revising paragraph (d) to replace the reference to an obsolete proper shipping name with a reference to the current proper shipping names. This change was completed under a different rulemaking, Docket No. PHMSA–2013–0158 (HM–244F) 78 FR 60748 (Oct. 2, 2013). Further amendment to this paragraph is not needed in this final rule.

Lawrence Laude requested that paragraph (d) be expanded to include packages of special form material where the activity is less than A_2 to account for special form sources with expired or unavailable documentation which could be shipped as ''Radioactive Material, Type A Package.'' As discussed under our changes to § 172.203(d)(2), if such documentation does not exist, the shipper should not classify the material as special form and then this paragraph would not be applicable.

Section 173.477

This section details the requirements for approval of packagings containing greater than 0.1 kg of non-fissile or fissile-excepted uranium hexafluoride. In paragraph (a), we are extending the retention period for uranium hexafluoride packaging documentation from one year to two years after the offeror's latest shipment, to coincide with the minimum retention period for shipping papers.

Section 174.700

We are removing and reserving paragraph (e), which provided special handling requirements for fissile material, controlled shipments, since that term was removed from the regulations in our January 26, 2004 rulemaking (69 FR 3632 (HM–230)). Lawrence Laude stated that paragraph (e) should not be deleted, but should be reworded to be consistent with, for example, § 177.842(f) as ''fissile material controlled shipments'' were replaced with exclusive use shipments with a total CSI not to exceed 100. The commenter also stated that if this change is intended to rely on the references to §§ 173.457 and 173.459 in § 174.700(d), the requirements in part 177 should be similar and the different modal requirements should be consistent. However, paragraph (d) does provide references to §§ 173.457 and 173.459, as does § 177.842(f). The commenter also proposed deletion of § 173.459, but as we did not include any proposed changes to that section in the NPRM we are not adopting that suggestion.

Section 174.715

This section prescribes requirements for cleanliness of rail transport vehicles after use. We are revising § 174.715(a) to make this section consistent with the changes being made in § 173.443(c) to clarify the phrase ''returned to service.''

Section 175.702

This section provides separation distance requirements for packages containing Class 7 (radioactive) materials in cargo aircraft. In the NPRM we proposed changes to § 175.702(b) and (c) to include references to the CSI limits in § 175.700(b). Lawrence Laude noted that this paragraph is inconsistent with TS–R–1, which does not have limits on groups of packages beyond the limits for the entire aircraft. We agree that this paragraph is more stringent than TS–R–1, but not otherwise contradictory. In other words, compliance with the existing requirements of § 175.702(b) satisfies the (lesser) requirements in TS–R–1. As such, we are adopting the changes to § 175.702 as proposed in the NPRM.

Section 175.705

This section describes requirements concerning radioactive contamination of aircraft. In paragraph (c) we are clarifying that the totality of any radioactive substances remaining after clean-up of an aircraft where radioactive material has been released must not meet the definition of radioactive material (as defined in § 173.403) before

returning the aircraft to service. Lawrence Laude noted the proposed change to § 175.705 appears to be more stringent than the requirement for other modes as well as the non-fixed contamination limits in § 173.443(a). The commenter is correct in noting the contamination related requirements for aircraft are different from the other modes. The differences are a result of the evolution of the requirements, dating back to aircraft contamination events that occurred in the 1960s. However, it should be noted that the contamination limits in § 173.443 apply to packages, conveyances and other related items that are offered for Class 7 transport. It should also be noted that § 173.443(a) does not just require compliance with the Table 9 limits, but also that contamination be kept as low as reasonably achievable.

Section 176.715

This section describes requirements concerning radioactive contamination of vessels. We are revising § 176.715 to make this section consistent with the changes being made in § 173.443(c) to clarify when holds, compartments, or deck areas used for the transportation of LSA material or SCO under exclusive use conditions may be ''used again'' (i.e. ''returned to service''). Lawrence Laude stated these changes to § 176.715 would add increased ambiguity rather than eliminating it because it does not specifically address contamination limits for holds, compartments, and deck areas being returned to general service. The commenter also stated it was questionable whether a deck area would be used for unpackaged radioactive material. We believe the definition of contamination in conjunction with the new scope exclusion provided in § 173.401(b)(5) provides clear guidance as to when the HMR is applicable in these transport cases cited by the commenter, as well as all other transport scenarios. However, any further transfer or ownership criteria of radioactive material will be regulated separately by the applicable licensing authority. Use of a deck area for unpackaged transport is conceivable in accordance with § 173.427(c), so it is not appropriate to revise this wording.

Section 177.843

This section describes requirements concerning radioactive contamination of vehicles. In § 177.843(a), PHMSA is adding a reference to § 173.443(b). This is part of a larger proposed change developed from PHMSA internal review, that is intended to make this section consistent with the changes proposed in § 173.443(c). In this final rule, PHMSA is modifying § 173.443(c), to eliminate the ambiguity and confusion concerning the phrase ''returned to service,'' for conveyances, overpacks, freight containers, tanks, and intermediate bulk containers that may have had radioactive substances deposited on them during certain Class 7 (radioactive) exclusive use transport scenarios.

Lawrence Laude suggested that § 177.843 fails to address the contamination limits to be applied to motor vehicles being returned to general service. We believe the definition of contamination in conjunction with the new scope of exclusions provided in § 173.401(b)(5) will provide clear guidance as to when the HMR is applicable in these transport cases cited by the commenter, as well as all other possible transport scenarios. However, any further transfer or ownership criteria of radioactive material will be regulated separately by the applicable licensing agency.

Lawrence Laude further stated the current and proposed § 177.843(a) requires that motor vehicles used for an exclusive use shipment of LSA material or SCO per § 173.427(b)(4) must be surveyed for contamination after each use. The commenter also noted § 173.427(b)(4) allows LSA material and SCO to be shipped in packages meeting the performance based criteria of § 173.410 and these are the same criteria that Type IP–1 packages have to meet, yet exclusive use shipments of LSA material and SCO in Type IP–1 packages do not require vehicle surveys after use. For consistency, the commenter recommended that the requirement for surveying vehicles used for § 173.427(b)(4) shipments be deleted from § 177.843(a) and the corresponding sections of Parts 174 and 176. We believe the commenter failed to note the longstanding domestic exception in § 173.427(b)(4) permits liquid LSA–I, LSA–II, LSA–III and SCO–II to be transported in a Type IP–1 package, under certain conditions, rather than a Type IP–2 or Type IP–3 as required by Table 6 in § 173.427. This practice has been demonstrated to provide needed flexibility and an effective level of safety for several decades. A shipper is not required to package in accordance with § 173.427(b)(4) and may elect to ship solid LSA–I and SCO–I in a Type IP–1 non-exclusive use in accordance with § 173.427(b)(1) and Table 6 in § 173.427. A shipper may also elect to package in accordance with §§ 173.427(b)(2), (3), or (5), which would not necessarily require the survey required by § 177.843(a).

Section 178.350

This section provides specifications for specification 7A packages. We are revising paragraph (c) to clarify that a DOT Specification 7A Type A package must satisfy the requirements of § 178.2 as well as the marking requirements of § 178.3.

Sections 178.356, 176.356–1 through178.356–5

These sections provide specifications for specification 20PF phenolic-foam insulated, metal overpacks. USEC noted that this section, along with the sections cited below on the 21PF overpacks, should also be deleted in its entirety, as the 20PF series overpacks are old specification packages that also are no longer in service. We agree, and are removing and reserving these sections.

Sections 178.358, 178.358–1 through 178.358–6

These sections provide specifications for specification 21PF fire and shock resistant, phenolic-foam insulated, metal overpacks. We are removing §§ 178.358 and 178.358–1 through 178.358–6 because 21PF overpacks for uranium hexafluoride cylinders are no longer authorized.

Sections 178.360, 178.360–1 through 178.360–4

These sections provide specifications for specification 2R: Inside containment vessels. We are removing §§ 178.360, and 178.360–1 through 178.360–4 pertaining to the DOT Specification 2R inside containment vessel since specification 2R was only required, under certain conditions, to be used as the inner container for the DOT Specification 20WC, 21WC, 6L, and 6M packages, and authorization for use of these latter packages was terminated on October 1, 2008. J. L. Shepherd was concerned that removal of the 2R specification would impact Special Permits that include their usage; however, this change would not directly affect such Special Permits.

IV. Regulatory Analyses and Notices

A. Statutory/Legal Authority for This Rulemaking

This final rule is published under authority of 49 U.S.C. 5103 and 5120 which, respectively:

1. Authorize the Secretary of Transportation to (a) designate radioactive and other materials ''as hazardous when the Secretary determines that transporting the material in commerce in a particular amount and form may pose an unreasonable risk to health and safety or

property,'' and (b) ''prescribe regulations for the safe transportation, including security, of hazardous material in intrastate, interstate, and foreign commerce.''

2. Direct the Secretary to (a) ''participate in international forums that establish or recommend mandatory standards and requirements for transporting hazardous material in international commerce,'' and (b) ''consult with interested authorities to ensure that, to the extent practicable, regulations the Secretary prescribes . . . are consistent with standards and requirements related to transporting hazardous material that international authorities adopt,'' except that the Secretary need not adopt an international standard or requirement which ''the Secretary decides. . .is unnecessary or unsafe,'' and the Secretary may prescribe a more stringent safety standard or requirement which the Secretary decides ''is necessary in the public interest.'' This final rule amends requirements in the HMR governing the transportation of Class 7 (radioactive) materials in commerce to maintain alignment with international standards by adopting recent updates in TS–R–1, including changes to packaging requirements, definitions, and activity limits.

Harmonization serves to facilitate international commerce; at the same time, harmonization promotes the safety of people, property, and the environment by reducing the potential for confusion and misunderstanding that could result if shippers and transporters were required to comply with two or more conflicting sets of regulatory requirements. While the intent of this rulemaking is to align the HMR with international standards, we review and consider each amendment on its own merit based on its overall impact on transportation safety and the economic implications associated with its adoption into the HMR. Our goal is to harmonize without sacrificing the current HMR level of safety and without imposing undue burdens on the regulated community. Thus, as explained in the corresponding sections above, we are not harmonizing with certain specific provisions of the TS–R–1. Moreover, we are maintaining a number of current exceptions for domestic transportation that should minimize the compliance burden on the regulated community.

In developing this final rule PHMSA consulted with the NRC and the U.S. Coast Guard.

B. Executive Orders 12866 and 13563 and DOT Regulatory Policies and Procedures

This rulemaking is not considered a significant regulatory action under Executive Order (E.O.) 12866 (''Regulatory Planning and Review''), as supplemented and reaffirmed by E.O. 13563 (''Improving Regulation and Regulatory Review''), stressing that, to the extent permitted by law, an agency rulemaking action must be based on benefits that justify its costs, impose the least burden, consider cumulative burdens, maximize benefits, use performance objectives, and assess available alternatives, and the Regulatory Policies and Procedures of the Department of Transportation (44 FR 11034).

During the rulemaking process, PHMSA considered three alternatives to harmonize domestic and international radioactive materials transportation requirements:

Alternative 1: Do nothing. The United States actively participates in the development of uniform international standards for transporting hazardous materials. Because all major countries and international carrier organizations have or will adopt the changes proposed in this rulemaking, a do-nothing approach would fail to adopt international standards which enhance safety in the transportation of radioactive materials and would result in complications in the movement of these materials. Future inconsistencies with international transport standards may result in foreign authorities refusing to accept hazardous material shipments prepared in accordance with the HMR. To successfully participate in international markets, U.S. companies would be required to conform to dual regulations. Inconsistent domestic and international regulations also have an adverse safety impact by making it more difficult for shippers and carriers to understand and comply with all applicable requirements. Unnecessary transportation delays may also expose international shipments to additional safety and security vulnerabilities. For these reasons, PHMSA did not adopt Alternative 1.

Alternative 2: Adopt the international standards in their entirety. Under this alternative, all revisions to the IAEA regulations would be incorporated into the HMR. In some instances PHMSA believes more stringent regulations are necessary to enhance transportation safety, and in others, less stringent regulations are necessary to reduce economic burden. Because of certain safety and economic concerns PHMSA elected not to propose adoption into the HMR of some amendments incorporated into the IAEA regulations. In addition, PHMSA and the NRC have identified changes that are only applicable domestically that would increase safety, reduce costs, and improve compliance. For these reasons, PHMSA did not adopt Alternative 2.

Alternative 3: Adopt IAEA regulations with additional changes to the HMR that promise to enhance safety and decrease regulatory compliance obstacles. Under this alternative, PHMSA is harmonizing the HMR with the IAEA regulations and the NRC proposed amendments to an extent consistent with U.S. safety and economic goals. As indicated above, PHMSA is not adopting provisions that, in PHMSA's view, do not provide an adequate level of safety. Further, PHMSA is providing for exceptions and extended compliance periods to minimize the potential economic impact of any revisions on the regulated community. PHMSA provides detailed justification for each instance in the final rule where the proposed change differs from the revised IAEA regulations. Alternative 3 is the only alternative that addresses, in all respects, the purpose of this regulatory action, which is to facilitate the safe and efficient transportation of hazardous materials in international commerce. For these reasons, Alternative 3 is PHMSA's chosen alternative. A complete copy of the economic impact assessment for this final rule is available in the docket for this rulemaking action PHMSA–2009–0063 (HM–250).

C. Executive Order 13132

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

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

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

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

(3) The preparation, execution, and use of shipping documents related to hazardous material and requirements related to the number, contents, and placement of those documents;

(4) The written notification, recording, and reporting of the unintentional release in transportation of hazardous material; and

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

This final rule addresses subject items (1), (2), (3), and (5) 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 final rule and not later than two years after the date of issuance. The effective date of Federal preemption is January 1, 2015.

D. Executive Order 13175

This final rule was analyzed in accordance with the principles and criteria contained in Executive Order 13175 (''Consultation and Coordination with Indian Tribal Governments''). PHMSA received two comments concerning Executive Order 13175. PHMSA received a comment from NIRS and CACC asking how we concluded that the proposed rule would not uniquely impact communities of Indian Tribal leadership. PHMSA also received a comment from the Alaska Inter-Tribal Council stating its opposition to the assertion that our proposed rule does not significantly or uniquely affect the communities of the Indian Tribal governments. The Alaska Inter-Tribal Council states that international shipping of radioactive materials is of great concern because of the potential adverse risks to the Arctic territory and its inhabitants. It further states that consultation between tribal governments and PHMSA must occur before any changes to PHMSA rules that could potentially adversely impact tribal communities, territories, peoples and traditional ways of life.

This rule has the intended goal of harmonizing with international standards for the safe transportation of radioactive materials, making internally identified clarifications of requirements, and making changes that enhance safety while shipments of radioactive materials are in transportation. International and domestic shipments of radioactive materials are already transiting arctic waters and Alaska in compliance with the requirements of TS–R–1 or the HMR. The changes adopted in this final rule are simply creating greater harmonization with the international standard, and are not creating or authorizing new hazardous materials shipments or transit routes. Furthermore, consistency between U.S. and international regulations enhances the safety of international hazardous materials transportation through better understanding of the regulations, an increased level of industry compliance, the smooth flow of hazardous materials from their points of origin to their points of destination, and consistent emergency response in the event of a hazardous materials incident. Based on this information and the absence of specific indications to the contrary from these commenters, the revisions adopted in this final rule do not have direct tribal implications and do not impose substantial direct compliance costs on Indian tribal governments; consequently the funding and consultation requirements of Executive Order 13175 do not apply.

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

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires an agency to review regulations to assess their impact on small entities and has been developed in accordance with Executive Order 13272 (''Proper Consideration of Small Entities in Agency Rulemaking'') and DOT's procedures and policies to promote compliance with the Regulatory Flexibility Act to ensure that potential impacts of draft rules on small entities are properly considered.

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

Many companies will realize economic benefits as a result of these amendments. Additionally, the changes effected by this final rule will relieve U.S. companies, including small entities competing in foreign markets, from the burden of complying with a dual system of regulations. Therefore, we certify that these amendments will not have a significant economic impact on a substantial number of small entities. A complete copy of the regulatory flexibility analysis for this final rule is available in the docket for this rulemaking action.

F. Paperwork Reduction Act

PHMSA currently has approved information collections under Office of Management and Budget (OMB) Control Number 2137–0034, ''Hazardous Materials Shipping Papers and Emergency Response Information,'' and OMB Control Number 2137–0510, ''Radioactive Materials Transportation Requirements.'' Specifically, this final rule will result in:

- A decrease in the annual information collection burden of OMB Control Number 2137–0034 due to reductions in the shipping paper requirements for excepted quantities of RAM shipments. These reductions in burden include not requiring the mass of these shipments on the shipping papers for air shipments in § 172.202(a)(6), the additional description in § 172.203(d) for RAM shipments, and not requiring the shippers certification statement for RAM shipments in § 172.204(c)(4) and
- an increase in the annual information collection burden of OMB Control Number 2137–0510 due to an increase in the duration of record keeping requirements in §§ 173.411(c) and 173.415(a), and the documentation required to demonstrate a package complies with testing requirements in §§ 173.415(a)(1) and (a)(2).

In response to comments received from multiple commenters we are authorizing an option for alternative documentation to allow an offeror who receives a packaging from another party acting as the manufacturer, to rely on a manufacturer's certification when available. In such instances, the offeror must maintain a copy of the manufacturer's certification and, if requested by DOT, be able to obtain a copy of the complete documentation from the manufacturer. These changes will not result in an increase of respondents or responses, as the new requirements are in addition to existing package documentation requirements.

There will however be additional costs involved in the preparation and retention of the documents in question. The manufacturer's certification is an additional document, not previously provided for in the HMR, but is merely an optional alternative to the existing package documentation requirements.

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

OMB Control Number 2137–0034

Annual Decrease in Number of Respondents: 10,000.

Annual Decrease in Annual Number of Responses: 100,000.

Annual Decrease in Annual Burden Hours: 140.

Annual Decrease in Annual Burden Costs: $5,912.

100,000 responses at 5 seconds a response equals 140 hours at $42.23 an hour.

OMB Control Number 2137–0510.

Annual Increase in Number of Respondents: 0.

Annual Increase in Annual Number of Responses: 500.

Annual Increase in Annual Burden Hours: 6100.

Annual Increase in Annual Burden Costs: $394,731.

1400 modifications to existing responses at $64.71 an hour and four hours per response and; 500 new certifications at $64.71 an hour and one hour per response.

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

G. Regulation Identifier Number (RIN)

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

H. Unfunded Mandates Reform Act

This final rule does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It does not result in costs of $141.3 million or more, adjusted for inflation, to either State, local, or tribal governments, in the aggregate, or to the private sector in any one year, and is the least burdensome alternative that achieves the objective of the rule.

I. Environmental Assessment

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

1. Purpose and Need

PHMSA is amending requirements in the HMR pertaining to the transportation of Class 7 (radioactive) materials to harmonize the HMR with changes contained in the IAEA publication, entitled ''Regulations for the Safe Transport of Radioactive Material, 2009 Edition, IAEA Safety Standards Series No. TS–R–1,'' and making other amendments based on PHMSA's own initiative. These amendments update, clarify, or provide relief from certain existing regulatory requirements to promote safer transportation practices, eliminate unnecessary regulatory requirements, facilitate international commerce, and make these requirements easier to understand.

2. Alternatives

In developing this rule, PHMSA considered three alternatives:

1. Do nothing;

2. Adopt the international standards in their entirety; or

3. Adopt IAEA regulations and DOT/NRC based changes that enhance safety and decrease regulatory compliance obstacles.

Alternative 1:

Because our goal is to facilitate uniformity, compliance, commerce and safety in the transportation of hazardous materials, we rejected this alternative.

Alternative 2:

By adopting the international standards in their entirety, PHMSA could potentially adopt provisions that, in our view, do not provide an adequate level of transportation safety and environmental safety and protection. Further, because we provide for domestic exceptions and extended compliance periods to minimize the potential economic impact of any revisions on the regulated community, this alternative was also rejected.

Alternative 3 is PHMSA's selected alternative, because it is the only alternative that addresses, in all respects, the purpose of this regulatory action to facilitate the safe and efficient transportation of hazardous materials in international commerce. Alternative 1 would not facilitate uniformity, compliance, commerce and safety in the transportation of hazardous materials. Alternative 2 includes, in some instances, less stringent regulations than are necessary to enhance transportation safety, and in other instances, more stringent regulations which unnecessarily increase economic burdens. In addition, PHMSA and the NRC have identified domestic-only changes that would increase safety, reduce costs, and improve compliance.

3. Analysis of Environmental Impacts

Hazardous materials are transported by aircraft, vessel, rail, and highway. The potential for environmental damage or contamination exists when packages of Class 7 (radioactive) material are involved in accidents or en route incidents resulting from cargo shifts, valve failures, package failures, or loading, unloading, or handling problems. The ecosystems that could be affected by a release include air, water, soil, and ecological resources (for example, wildlife habitats), as well as human exposure. The adverse environmental impacts associated with releases of most hazardous materials are short-term impacts that can be greatly reduced or eliminated through prompt clean-up of the accident scene. Most Class 7 (radioactive) materials are not transported in quantities sufficient to cause significant, long-term environmental damage if they are released, and those that have the potential to significantly impact human life or the environment must meet strict packaging and handling standards to ensure that even under accident conditions the hazardous material

would not be released into the environment.

The hazardous material regulatory system is a risk management system that is prevention-oriented and focused on identifying a hazard and reducing the probability and quantity of a hazardous material release. Making the regulatory provisions in the HMR clearer and more consistent with international standards will promote compliance and facilitate efficient transportation, thereby enhancing the safe transportation of hazardous materials and the protection of the environment. Relaxing certain regulatory requirements is based on PHMSA's experience, review, and conclusion that the changes are safe. PHMSA certifies that the amendments proposed in this final rule will not have a significant impact on the environment. In this final rule PHMSA is adopting the following noteworthy amendments to the HMR:

Placarding of conveyances.

In this final rule PHMSA is requiring placards to be affixed to conveyances carrying fissile material packages, unpackaged low specific activity (LSA) material or surface contaminated objects (SCO) in category I (i.e., LSA–I and SCO–I respectively), all conveyances required by §§ 173.427 and 173.441 to operate under exclusive use conditions, and all closed vehicles used in accordance with § 173.443(d). PHMSA expects a modest positive environmental impact due to awareness provided to transport personnel that shipments contain modest amounts of radioactivity, as well as a slight reduction in exposure to transportation personnel. The modest gains would not be achieved under alternative one or two.

Extension of package documentation retention requirement and clarification of information required to be maintained.

New clarification on types of information required to be retained for certain packages used to ship radioactive materials is provided in this final rule. PHMSA expects modest positive environmental gains due to a projected increase in appropriately tested and constructed packages, which will lead to a decrease in exposure to released radioactivity. As this change is a result an internal PHMSA review of existing domestic regulations, these modest environmental gains would not be achieved by selecting alternatives one or two.

Requirements for leaking or suspected leaking packages of radioactive material, or conveyance carrying leaking or suspected leaking unpackaged radioactive material.

PHMSA is adding new required actions for leaking or suspect Class 7 (radioactive) packages or unpackaged material, which include; immediate actions and assessments, protective requirements, recovery techniques, and prerequisites for continued transport. PHMSA expects modest positive environmental impact from this requirement. Increased clarity on responsibilities and actions to be taken when a leaking radioactive package is discovered are expected to reduce exposure to transportation workers and the general public. Any environmental gains from this change would be realized under alternatives two or three.

Contamination.

PHMSA is adding new as well as clarifying pre- and post-shipment requirements for Class 7 (radioactive) transport regarding external contamination of radioactive substances. PHMSA expects a modest positive environmental impact from this rulemaking. The increased clarity on responsibilities and actions to be taken before and after transportation will benefit the environment, workers, emergency responders, and the general public by minimizing the possibility of the unintended spread of radioactive contamination during routine conditions of transport. As this change is a result an internal PHMSA review of existing domestic regulations, these modest environmental gains would not be achieved by selecting alternatives one or two.

4. Agency Consultation and Finding of No Significant Impact

PHMSA, in consultation with the NRC, certifies that the amendments in this final rule will not have a significant impact on the environment.

J. Privacy Act

Anyone is able to search the electronic form of 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) which may be viewed at *http://www.gpo.gov/fdsys/pkg/FR-2000-04-11/pdf/00-8505.pdf.*

K. Executive Order 13609 and International Trade Analysis

Under Executive Order 13609 (''Promoting International Regulatory Cooperation''), agencies must consider whether the impacts associated with significant variations between domestic and international regulatory approaches are unnecessary or may impair the ability of American businesses to export and compete internationally. In meeting shared challenges involving health, safety, labor, security, environmental, and other issues, international regulatory cooperation can identify approaches that are at least as protective as those that are or would be adopted in the absence of such cooperation. International regulatory cooperation can also reduce, eliminate, or prevent unnecessary differences in regulatory requirements.

Similarly, the Trade Agreements Act of 1979 (Pub. L. 96–39), as amended by the Uruguay Round Agreements Act (Pub. L. 103–465), prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. For purposes of these requirements, Federal agencies may participate in the establishment of international standards, so long as the standards have a legitimate domestic objective, such as providing for safety, and do not operate to exclude imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards.

PHMSA participates in the establishment of international standards to protect the safety of the American public, and we have assessed the effects of this final rule to ensure that it does not cause unnecessary obstacles to foreign trade. In fact, the rule is designed to facilitate international trade. Accordingly, this rulemaking is consistent with Executive Order13609 and PHMSA's obligations under the Trade Agreement Act, as amended.

List of Subjects

49 CFR Part 171

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

49 CFR Part 172

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

49 CFR Part 173

Hazardous materials transportation, Incorporation by reference, Packaging and containers, Radioactive materials,

Reporting and recordkeeping requirements, Uranium.

49 CFR Part 174

Hazardous materials transportation, Radioactive materials, Railroad safety.

49 CFR Part 175

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

49 CFR Part 176

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

49 CFR Part 177

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

49 CFR Part 178

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

In consideration of the foregoing, 49 CFR Chapter I is 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; Pub. L. 101–410 section 4 (28 U.S.C. 2461 note); Pub. L. 104–134, section 31001; 49 CFR 1.81 and 1.97.

■ 2. Amend § 171.7 by:
■ a. Revising paragraph (a)(1);
■ b. Removing paragraph (d)(2) and redesignating paragraphs (d)(3) through (8) as (d)(2) through (7) respectively;
■ c. Removing paragraph (i);
■ d. Removing paragraph (p);
■ e. Removing paragraph (ee);
■ f. Redesignating paragraphs (j) through (o) as (i) through (m) respectively;
■ g. Redesignating paragraphs (q) through (dd) as (n) through (bb) respectively; and
■ h. Revising newly designated paragraphs (q)(1) and (u)(9) as follows:

§ 171.7 Reference material.

(a) * * *

(1) *General.* There is incorporated, by reference in parts 171–180 of this subchapter, matter referred to that is not specifically set forth. This matter is hereby made a part of the regulations in parts 171–180 of this subchapter. The matter subject to change is incorporated only as it is in effect on the date of issuance of the regulation referring to that matter. The material listed in paragraphs (b) through (bb) of this section has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Material is incorporated as it exists on the date of the approval and a notice of any change in the material will be published in the **Federal Register**. Matters referenced by footnote are included as part of the regulations of this subchapter.

* * * * *

(q) * * *

(1) No. TS–R–1, IAEA Safety Standards for Protecting People and the Environment; Regulations for the Safe Transport of Radioactive Material, (IAEA Regulations), 2009 Edition, into §§ 171.22; 171.23; 171.26, 173.415, 173.416, 173.417, 173.473.

* * * * *

(u) * * *

(9) ISO 2919:1999(E), Radiation Protection—Sealed radioactive sources—General requirements and classification, (ISO 2919), second edition, February 15, 1999, into § 173.469.

* * * * *

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

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

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

■ 4. In § 172.203, paragraphs (d)(2), (d)(3), and (d)(4) are revised to read as follows:

§ 172.203 Additional description requirements.

* * * * *

(d) * * *

(2) A description of the physical and chemical form of the material:

(i) For special form materials, the words ''special form'' unless the words ''special form'' already appear in the proper shipping name; or

(ii) If the material is not in special form, a description of the physical and chemical form of the material (generic chemical descriptions are permitted).

(3) The maximum activity of the radioactive contents contained in each package during transport in terms of the appropriate SI units (*e.g.,* Becquerels (Bq), Terabecquerels (TBq)). The activity may also be stated in appropriate customary units (*e.g.,* Curies (Ci), milliCuries (mCi), microCuries (uCi)) in parentheses following the SI units. Abbreviations are authorized. Except for plutonium-239 and plutonium-241, the weight in grams or kilograms of fissile radionuclides (or the mass of each fissile nuclide for mixtures when appropriate) may be inserted instead of activity units. For plutonium-239 and plutonium-241, the weight in grams of fissile radionuclides (or the mass of each fissile nuclide for mixtures when appropriate) may be inserted in addition to the activity units.

(4) The category of label applied to each package in the shipment. For example: ''RADIOACTIVE WHITE–I,'' or ''WHITE–I.''

* * * * *

■ 5. In § 172.310, paragraph (b) is revised to read as follows:

§ 172.310 Class 7 (radioactive) materials.

* * * * *

(b) Each industrial, Type A, Type B(U), or Type B(M) package must be legibly and durably marked on the outside of the packaging, in letters at least 12 mm (0.47 in) high, with the words ''TYPE IP–1,'' ''TYPE IP–2,'' ''TYPE IP–3,'' ''TYPE A,'' ''TYPE B(U)'' or ''TYPE B(M),'' as appropriate. A package which does not conform to Type IP–1, Type IP–2, Type IP–3, Type A, Type B(U) or Type B(M) requirements may not be so marked.

* * * * *

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

§ 172.402 Additional labeling requirements.

* * * * *

(d) * * *

(1) A subsidiary label is not required for a package containing material that satisfies all of the criteria in § 173.4, § 173.4a, or § 173.4b applicable to the subsidiary hazard class.

* * * * *

■ 7. In § 172.403, paragraphs (d) and (g)(2) are revised to read as follows:

§ 172.403 Class 7 (radioactive) material.

* * * * *

(d) *EMPTY label.* See § 173.428(e) of this subchapter for EMPTY labeling requirements.

* * * * *

(g) * * *

(2) *Activity.* The maximum activity of the radioactive contents in the package during transport must be expressed in

appropriate SI units (*e.g.,* Becquerels (Bq), Terabecquerels (TBq)). The activity may also be stated in appropriate customary units (*e.g.,* Curies (Ci), milliCuries (mCi), microCuries (uCi)) in parentheses following the SI units. Abbreviations are authorized. Except for plutonium-239 and plutonium-241, the weight in grams or kilograms of fissile radionuclides (or the mass of each fissile nuclide for mixtures when appropriate) may be inserted instead of activity units. For plutonium-239 and plutonium-241, the weight in grams of fissile radionuclides (or the mass of each fissile nuclide for mixtures when appropriate) may be inserted in addition to the activity units.

* * * * *

■ 8. In § 172.504, paragraph (e), footnote 1 to Table 1 is revised to read as follows:

§ 172.504 General placarding requirements.

* * * * *

(e) * * *

[1] RADIOACTIVE placards are also required for: All shipments of unpackaged LSA–I material or SCO–I; all shipments required by §§ 173.427, 173.441, and 173.457 of this subchapter to be operated under exclusive use; and all closed vehicles used in accordance with § 173.443(d).

* * * * *

■ 9. In § 172.505, paragraph (b) is revised to read as follows:

§ 172.505 Placarding for subsidiary hazards.

* * * * *

(b) In addition to the RADIOACTIVE placard which may be required by § 172.504(e) of this subpart, each transport vehicle, portable tank or freight container that contains 454 kg (1,001 pounds) or more gross weight of non-fissile, fissile-excepted, or fissile uranium hexafluoride must be placarded with a CORROSIVE placard on each side and each end.

* * * * *

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

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

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

■ 11. In § 173.4, paragraph (a)(1)(iv) is removed and reserved, and paragraph (b) is revised to read as follows:

§ 173.4 Small quantities for highway and rail.

(a) * * *

(1) * * *

(iv) [Reserved]

* * * * *

(b) A package containing a Class 7 (radioactive) material also must conform to the requirements of § 173.421(a)(1) through (a)(5), § 173.424(a) through (g), or § 173.426(a) through (c) as applicable.

* * * * *

■ 12. In § 173.25, paragraph (a)(4) is revised to read as follows:

§ 173.25 Authorized packagings and overpacks.

(a) * * *

(4) The overpack is marked with the word ''OVERPACK'' when specification packagings are required, or for Class 7 (radioactive) material when a Type A, Type B(U), Type B(M) or industrial package is required. The ''OVERPACK'' marking is not required when the required markings representative of each package type contained in the overpack are visible from the outside of the overpack.

* * * * *

■ 13. In § 173.401, paragraph (b)(4) is revised and a new paragraph (b)(5) is added to read as follows:

§ 173.401 Scope.

* * * * *

(b) * * *

(4) Natural material and ores containing naturally occurring radionuclides which are either in their natural state, or which have only been processed for purposes other than for extraction of the radionuclides, and which are not intended to be processed for the use of these radionuclides, provided the activity concentration of the material does not exceed 10 times the exempt material activity concentration values specified in § 173.436, or determined in accordance with the requirements of § 173.433.

(5) Non-radioactive solid objects with radioactive substances present on any surfaces in quantities not exceeding the threshold limits set forth in the definition of contamination in § 173.403.

■ 14. Section 173.403 is amended as follows:

■ a. The definitions of ''contamination,'' ''criticality safety index (CSI),'' ''fissile material,'' ''low specific activity (LSA) material,'' ''radiation level,'' and ''uranium'' are revised.

■ b. In the definition of ''package,'' paragraphs (2)(i), (2)(ii), and (2)(iii) are revised to read as follows:

§ 173.403 Definitions.

* * * * *

Contamination means the presence of a radioactive substance on a surface in quantities in excess of 0.4 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters or 0.04 Bq/cm^2 for all other alpha emitters. There are two categories of contamination:

(1) Fixed contamination means contamination that cannot be removed from a surface during normal conditions of transport.

(2) Non-fixed contamination means contamination that can be removed from a surface during normal conditions of transport.

* * * * *

Criticality Safety Index (CSI) means a number (rounded up to the next tenth) which is used to provide control over the accumulation of packages, overpacks or freight containers containing fissile material. The CSI for a package containing fissile material is determined in accordance with the instructions provided in 10 CFR 71.22, 71.23, and 71.59. The CSI for an overpack, freight container, consignment or conveyance containing fissile material packages is the arithmetic sum of the criticality safety indices of all the fissile material packages contained within the overpack, freight container, consignment or conveyance.

* * * * *

Fissile material means plutonium-239, plutonium-241, uranium-233, uranium-235, or any combination of these radionuclides. Fissile material means the fissile nuclides themselves, not material containing fissile nuclides, but does not include: Unirradiated natural uranium or depleted uranium; and natural uranium or depleted uranium that has been irradiated in thermal reactors only. Certain exceptions for fissile materials are provided in § 173.453.

* * * * *

Low Specific Activity (LSA) material means Class 7 (radioactive) material with limited specific activity which is not fissile material or is excepted under § 173.453, and which satisfies the descriptions and limits set forth below. Shielding material surrounding the LSA material may not be considered in determining the estimated average specific activity of the LSA material. LSA material must be in one of three groups:

(1) LSA–I:

(i) Uranium and thorium ores, concentrates of uranium and thorium ores, and other ores containing naturally occurring radionuclides which are intended to be processed for the use of these radionuclides; or

(ii) Natural uranium, depleted uranium, natural thorium or their

compounds or mixtures, provided they are unirradiated and in solid or liquid form; or

(iii) Radioactive material for which the A_2 value is unlimited; or

(iv) Other radioactive material in which the activity is distributed throughout and the estimated average specific activity does not exceed 30 times the values for activity concentration specified in § 173.436 or calculated in accordance with § 173.433, or 30 times the default values listed in Table 8 of § 173.433.

(2) LSA–II:

(i) Water with tritium concentration up to 0.8 TBq/L (20.0 Ci/L); or

(ii) Other radioactive material in which the activity is distributed throughout and the average specific activity does not exceed 10^{-4} A_2/g for solids and gases, and 10^{-5} A_2/g for liquids.

(3) LSA–III. Solids (*e.g.,* consolidated wastes, activated materials), excluding powders, that meet the requirements of § 173.468 and in which:

(i) The radioactive material is distributed throughout a solid or a collection of solid objects, or is essentially uniformly distributed in a solid compact binding agent (such as concrete, bitumen, ceramic, etc.);

(ii) The radioactive material is relatively insoluble, or it is intrinsically contained in a relatively insoluble material, so that, even under loss of packaging, the loss of Class 7 (radioactive) material per package by leaching when placed in water for seven days would not exceed 0.1 A_2; and

(iii) The estimated average specific activity of the solid, excluding any shielding material, does not exceed 2×10^{-3} A_2/g.

* * * * *

Package * * *

(1) * * *

(2) * * *

(i) ''Industrial package Type 1 (Type IP–1);

(ii) ''Industrial package Type 2 (Type IP–2); or

(iii) ''Industrial package Type 3 (Type IP–3).

* * * * *

Radiation level means the radiation dose-equivalent rate expressed in millisieverts per hour or mSv/h (millirems per hour or mrem/h). It consists of the sum of the dose-equivalent rates from all types of ionizing radiation present including alpha, beta, gamma, and neutron radiation. Neutron flux densities may be used to determine neutron radiation levels according to Table 1:

TABLE 1—NEUTRON FLUENCE RATES TO BE REGARDED AS EQUIVALENT TO A RADIATION LEVEL OF 0.01 mSv/h (1mrem/h) [1]

Energy of neutron	Flux density equivalent to 0.01 mSv/h (1 mrem/h) neutrons per square centimeter per second ($n/cm^2/s$)[1]
Thermal (2.5 10E–8) MeV ..	272.0
1 keV	272.0
10 keV	281.0
100 keV	47.0
500 keV	11.0
1 MeV	7.5
5 MeV	6.4
10 MeV	6.7

[1] Flux densities equivalent for energies between those listed in this table may be obtained by linear interpolation.

* * * * *

Uranium—natural, depleted or *enriched* means the following:

(1)(i) ''Natural uranium'' means uranium (which may be chemically separated) containing the naturally occurring distribution of uranium isotopes (approximately 99.28% uranium-238 and 0.72% uranium-235 by mass).

(ii) ''Depleted uranium'' means uranium containing a lesser mass percentage of uranium-235 than in natural uranium.

(iii) ''Enriched uranium'' means uranium containing a greater mass percentage of uranium-235 than 0.72%.

(2) For each of these definitions, a very small mass percentage of uranium-234 may be present.

* * * * *

■ 15. In § 173.410, paragraph (i)(3) is revised to read as follows:

§ 173.410 General design requirements.

* * * * *

(i) * * *

(3) A package containing liquid contents must be capable of withstanding, without leakage, an internal pressure that produces a pressure differential of not less than the maximum normal operating pressure plus 95 kPa (13.8 psi).

■ 16. Section 173.411 is revised to read as follows:

§ 173.411 Industrial packages.

(a) *General.* Each industrial package must comply with the requirements of this section which specifies package tests, and record retention applicable to Industrial Package Type 1 (Type IP–1), Industrial Package Type 2 (Type IP–2), and Industrial Package Type 3 (Type IP–3).

(b) *Industrial package certification and tests.* (1) Each Type IP–1 package must meet the general design requirements prescribed in § 173.410.

(2) Each Type IP–2 package must meet the general design requirements prescribed in § 173.410 and when subjected to the tests specified in § 173.465(c) and (d) or evaluated against these tests by any of the methods authorized by § 173.461(a), must prevent:

(i) Loss or dispersal of the radioactive contents; and

(ii) A significant increase in the radiation levels recorded or calculated at the external surfaces for the condition before the test.

(3) Each Type IP–3 package must meet the requirements for Type IP–1 and Type IP–2 packages, and must meet the requirements specified in § 173.412(a) through (j).

(4) A portable tank may be used as a Type IP–2 or Type IP–3 package provided that:

(i) It meets the requirements for Type IP–1 packages specified in paragraph (b)(1);

(ii) It meets the requirements prescribed in Chapter 6.7 of the United Nations Recommendations on the Transport of Dangerous Goods, (IBR, *see* § 171.7 of this subchapter), ''Requirements for the Design, Construction, Inspection and Testing of Portable Tanks and Multiple-Element Gas Containers (MEGCs),'' or other requirements at least equivalent to those standards;

(iii) It is capable of withstanding a test pressure of 265 kPa (38.4 psia); and

(iv) It is designed so that any additional shielding which is provided must be capable of withstanding the static and dynamic stresses resulting from handling and routine conditions of transport and of preventing more than a 20% increase in the maximum radiation level at any external surface of the portable tanks.

(5) A cargo tank or a tank car may be used as Type IP–2 or Type IP–3 package for transporting LSA–I and LSA–II liquids and gases as prescribed in Table 6 of § 173.427, provided that:

(i) It meets the requirements for a Type IP–1 package specified in paragraph (b)(1);

(ii) It is capable of withstanding a test pressure of 265 kPa (38.4 psia); and

(iii) It is designed so that any additional shielding which is provided must be capable of withstanding the static and dynamic stresses resulting from handling and routine conditions of transport and of preventing more than a

20% increase in the maximum radiation level at any external surface of the tanks.

(6) A freight container may be used as Type IP–2 or Type IP–3 packages provided:

(i) The radioactive contents are restricted to solid materials;

(ii) It meets the requirements for a Type IP–1 packages specified in paragraph (b)(1); and

(iii) It meets the standards prescribed in the International Organization for Standardization document ISO 1496–1: ''Series 1 Freight Containers—Specifications and Testing—Part 1: General Cargo Containers; excluding dimensions and ratings (IBR, *see* § 171.7 of this subchapter). It must be designed such that if subjected to the tests prescribed in that document and the accelerations occurring during routine conditions of transport it would prevent:

(A) Loss or dispersal of the radioactive contents; and

(B) More than a 20% increase in the maximum radiation level at any external surface of the freight containers.

(7) A metal intermediate bulk containers may be used as a Type IP–2 or Type IP–3 package, provided:

(i) It meets the requirements for a Type IP–1 package specified in paragraph (b)(1); and

(ii) It meets the requirements prescribed in Chapter 6.5 of the United Nations Recommendations on the Transport of Dangerous Goods, (IBR, see § 171.7 of this subchapter), ''Requirements for the Construction and Testing of Intermediate Bulk Containers,'' for Packing Group I or II, and if subjected to the tests prescribed in that document, but with the drop test conducted in the most damaging orientation, it would prevent:

(A) Loss or dispersal of the radioactive contents; and

(B) More than a 20% increase in the maximum radiation level at any external surface of the intermediate bulk container.

(c) Except for Type IP–1 packages, each offeror of an industrial package must maintain on file for at least two years after the offeror's latest shipment, and must provide to the Associate Administrator on request, complete documentation of tests and an engineering evaluation or comparative data showing that the construction methods, package design, and materials of construction comply with that specification.

■ 17. In § 173.412, paragraphs (f) and (k)(3)(ii) are revised to read as follows:

§ 173.412 Additional design requirements for Type A packages.

* * * * *

(f) The containment system will retain its radioactive contents under the reduction of ambient pressure to 60 kPa (8.7 psia).

* * * * *

(k) * * *

(3) * * *

(ii) Have a containment system composed of primary inner and secondary outer containment components designed to enclose the liquid contents completely and ensure retention of the liquid within the secondary outer component in the event that the primary inner component leaks.

* * * * *

■ 18. In § 173.415, paragraph (a) is revised to read as follows:

§ 173.415 Authorized Type A packages.

* * * * *

(a) DOT Specification 7A (see § 178.350 of this subchapter) Type A general packaging. Until January 1, 2017 each offeror of a Specification 7A package must maintain on file for at least one year after the latest shipment, and shall provide to DOT on request, complete documentation of tests and an engineering evaluation or comparative data showing that the construction methods, packaging design, and materials of construction comply with that specification. After January 1, 2017 each offeror of a Specification 7A package must maintain on file for at least two years after the offeror's latest shipment, and shall provide to DOT on request, one of the following:

(1) A description of the package showing materials of construction, dimensions, weight, closure and closure materials (including gaskets, tape, etc.) of each item of the containment system, shielding and packing materials used in normal transportation, and the following:

(i) If the packaging is subjected to the physical tests of § 173.465, and if applicable, § 173.466, documentation of testing, including date, place of test, signature of testers, a detailed description of each test performed including equipment used, and the damage to each item of the containment system resulting from the tests, or

(ii) For any other demonstration of compliance with tests authorized in § 173.461, a detailed analysis which shows that, for the contents being shipped, the package meets the pertinent design and performance requirements for a DOT 7A Type A specification package.

(2) If the offeror has obtained the packaging from another person who meets the definition of ''packaging manufacturer'' in § 178.350(c) of this subchapter, a certification from the packaging manufacturer that the package meets all the requirements of § 178.350 for the radioactive contents presented for transport and a copy of documents maintained by the packaging manufacturer that meet the requirements of paragraph (a)(1) of this section.

* * * * *

■ 19. In § 173.416, paragraph (c) is revised to read as follows:

§ 173.416 Authorized Type B packages.

* * * * *

(c) A package approved by the U.S. Nuclear Regulatory Commission under a special package authorization granted in accordance with 10 CFR 71.41(d) provided it is offered only for domestic transportation in accordance with the requirements in § 173.471(b) and (c).

■ 20. Section 173.417 is amended as follows:

■ a. Paragraphs (a)(3) and(b)(3) are removed;

■ b Table 3 is removed; and

■ c. Paragraph (c) is revised to read as follow:

§ 173.417 Authorized fissile materials packages.

* * * * *

(c) A package approved by the U.S. Nuclear Regulatory Commission under a special package authorization granted in accordance with 10 CFR 71.41(d) provided it is offered only for domestic transportation in accordance with the requirements in § 173.471(b) and (c).

■ 21. In § 173.420, paragraph (a)(2)(ii) is removed and reserved, paragraphs (a)(3)(i) and (a)(6) are revised, and a new paragraph (e) is added to read as follows:

§ 173.420 Uranium hexafluoride (fissile, fissile excepted and non-fissile).

(a) * * *

(2) * * *

(ii) [Reserved]

* * * * *

(3) * * *

(i) withstand a hydraulic test at an internal pressure of at least 1.4 MPa (200 psig) without leakage;

* * * * *

(6) The pressure in the package at 20 °C (68 °F) must be less than 101.3 kPa (14.7 psia).

* * * * *

(e) For a package containing 0.1 kg or more of UF_6, the proper shipping name and UN number ''Radioactive material, uranium hexafluoride, UN 2978'' must be used for the transportation of non-

fissile or fissile-excepted uranium hexafluoride and the proper shipping name and UN number ''Radioactive material, uranium hexafluoride, fissile, UN 2977'' must be used for the transport of fissile uranium hexafluoride.

■ 22. Section 173.421 is revised to read as follows:

§ 173.421 Excepted packages for limited quantities of Class 7 (radioactive) materials.

A Class 7 (radioactive) material with an activity per package which does not exceed the limited quantity package limits specified in Table 4 in § 173.425, and its packaging, are excepted from requirements in this subchapter for specification packaging, marking (except for the UN identification number marking requirement described in § 173.422(a)), labeling, and if not a hazardous substance or hazardous waste, shipping papers, and the requirements of this subpart if:

(a) Each package meets the general design requirements of § 173.410;

(b) The radiation level at any point on the external surface of the package does not exceed 0.005 mSv/h (0.5 mrem/h);

(c) The non-fixed contamination on the external surface of the package does not exceed the limits specified in § 173.443(a);

(d) The outside of the inner packaging or, if there is no inner packaging, the outside of the packaging itself bears the marking ''Radioactive;''

(e) The package does not contain fissile material unless excepted by § 173.453; and

(f) The material is otherwise prepared for shipment as specified in accordance with § 173.422.

■ 23. In § 173.422, the introductory text and paragraphs (a) and (e) are revised to read as follows:

§ 173.422 Additional requirements for excepted packages containing Class 7 (radioactive) materials.

An excepted package of Class 7 (radioactive) material that is prepared for shipment under the provisions of § 173.421, § 173.424, § 173.426, or § 173.428, or a small quantity of another hazard class transported by highway or rail (as defined in § 173.4) which also meets the requirements of one of these sections, is not subject to any additional requirements of this subchapter, except for the following:

(a) The outside of each package must be marked with:

(1) The UN identification number for the material preceded by the letters UN, as shown in column (4) of the Hazardous Materials Table in § 172.101 of this subchapter; and

(2) The letters ''RQ'' on a non-bulk packaging containing a hazardous substance.

* * * * *

(e) For a material that meets the definition of a hazardous substance or a hazardous waste, the shipping paper requirements of subpart C of part 172 of this subchapter, except that such shipments are not subject to shipping paper requirements applicable to Class 7 (radioactive) materials in §§ 172.202(a)(5), 172.202(a)(6), 172.203(d) and 172.204(c)(4).

■ 24. Section 173.427 is revised to read as follows:

§ 173.427 Transport requirements for low specific activity (LSA) Class 7 (radioactive) material and surface contaminated objects (SCO).

(a) In addition to other applicable requirements specified in this subchapter, LSA material and SCO must be transported in accordance with the following conditions:

(1) The external dose rate may not exceed an external radiation level of 10 mSv/h (1 rem/h) at 3 m (10 feet) from the unshielded material;

(2) The quantity of LSA material and SCO transported in any single conveyance may not exceed the limits specified in Table 5;

(3) LSA material and SCO that are or contain fissile material must conform to the applicable requirements of § 173.453;

(4) Packaged and unpackaged Class 7 (radioactive) materials must conform to the contamination control limits specified in § 173.443;

(5) External radiation levels may not exceed those specified in § 173.441; and

(6) For LSA material and SCO consigned as exclusive use:

(i) Shipments must be loaded by the consignor and unloaded by the consignee from the conveyance or freight container in which originally loaded;

(ii) There may be no loose radioactive material in the conveyance; however, when the conveyance is the packaging, there may not be any leakage of radioactive material from the conveyance;

(iii) Packaged and unpackaged Class 7 (radioactive) material must be braced so as to prevent shifting of lading under conditions normally incident to transportation;

(iv) Specific instructions for maintenance of exclusive use shipment controls shall be provided by the offeror to the carrier. Such instructions must be included with the shipping paper information;

(v) The shipment must be placarded in accordance with subpart F of part 172 of this subchapter;

(vi) For domestic transportation only, packaged and unpackaged Class 7 (radioactive) material containing less than an A_2 quantity are excepted from the marking and labeling requirements of this subchapter, other than the subsidiary hazard labeling required in 172.402(d). However, the exterior of each package or unpackaged Class 7 (radioactive) material must be stenciled or otherwise marked ''RADIOACTIVE—LSA'' or ''RADIOACTIVE—SCO'', as appropriate, and packages or unpackaged Class 7 (radioactive) material that contain a hazardous substance must be stenciled or otherwise marked with the letters ''RQ'' in association with the description in this paragraph (a)(6)(vi); and

(vii) Transportation by aircraft is prohibited except when transported in an industrial package in accordance with Table 6 of this section, or in an authorized Type A or Type B package.

(b) Except as provided in paragraph (c) or (d) of this section, LSA material and SCO must be packaged as follows:

(1) In an industrial package (Type IP–1, Type IP–2 or Type IP–3; § 173.411), subject to the limitations of Table 6;

(2) In a DOT Specification 7A (§ 178.350 of this subchapter) Type A package;

(3) In any Type B(U) or B(M) packaging authorized pursuant to § 173.416;

(4) For domestic transportation of an exclusive use shipment that is less than an A_2 quantity, in a packaging which meets the requirements of § 173.410; or

(5) In portable tanks, cargo tanks and tank cars, as provided in §§ 173.411(b)(4) and (5), respectively.

(c) LSA–I material and SCO–I may be transported unpackaged under the following conditions:

(1) All unpackaged material, other than ores containing only naturally occurring radionuclides, must be transported in such a manner that under routine conditions of transport there will be no escape of the radioactive contents from the conveyance nor will there be any loss of shielding;

(2) Each conveyance must be under exclusive use, except when only transporting SCO–I on which the contamination on the accessible and the inaccessible surfaces is not greater than 4.0 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters and 0.4 Bq/cm² for all other alpha emitters;

(3) For SCO–I where it is reasonable to suspect that non-fixed contamination may exist on inaccessible surfaces in excess of the values specified in

paragraph (c)(2) of this section, measures shall be taken to ensure that the radioactive material is not released into the conveyance or to the environment; and

(4) The highway or rail conveyance must be placarded in accordance with subpart F of part 172 of this subchapter.

(d) LSA material and SCO that exceed the packaging limits in this section must be packaged in accordance with 10 CFR part 71.

(e) Tables 5 and 6 are as follows:

TABLE 5—CONVEYANCE ACTIVITY LIMITS FOR LSA MATERIAL AND SCO

Nature of material	Activity limit for conveyances other than by inland waterway	Activity limit for hold or compartment of an inland waterway conveyance
1. LSA–I	No limit	No limit.
2. LSA–II and LSA–III; Non-combustible solids	No limit	100 A_2.
3. LSA–II and LSA–III; Combustible solids and all liquids and gases	100 A_2	10 A_2.
4. SCO	100 A_2	10 A_2.

TABLE 6—INDUSTRIAL PACKAGE INTEGRITY REQUIREMENTS FOR LSA MATERIAL AND SCO

Contents	Industrial packaging type	
	Exclusive use shipment	Non exclusive use shipment
1. LSA–I:		
Solid	Type IP–1	Type IP–1.
Liquid	Type IP–1	Type IP–2.
2. LSA–II:		
Solid	Type IP–2	Type IP–2.
Liquid and gas	Type IP–2	Type IP–3.
3. LSA–III	Type IP–2	Type IP–3.
4. SCO–I	Type IP–1	Type IP–1.
5. SCO–II	Type IP–2	Type IP–2.

■ 25. In § 173.433, paragraphs (b) introductory text, (c) introductory text, (c)(1), (d)(3) and (h) are revised to read as follows:

§ 173.433 Requirements for determining basic radionuclide values, and for the listing of radionuclides on shipping papers and labels.

* * * * *

(b) For individual radionuclides which are not listed in the tables in § 173.435 or § 173.436 or for which no relevant data are available:

* * * * *

(c) In calculating A_1 and A_2 values for approval in accordance with paragraph (b)(2) of this section:

(1) It is permissible to use an A_2 value calculated using a dose coefficient for the appropriate lung absorption type, as recommended by the International Commission on Radiological Protection, if the chemical forms of each radionuclide under both normal and accident conditions of transport are taken into consideration.

* * * * *

(d) * * *

(3) If the package contains both special and normal form Class 7 (radioactive) material, the activity which may be transported in a Type A package must satisfy:

$$\sum_i \frac{B(i)}{A_1(i)} + \sum_j \frac{C(j)}{A_2(j)} \leq 1$$

Where:

The symbols are defined as in paragraphs (d)(1) and (d)(2) of this section.

* * * * *

(h) Tables 7 and 8 are as follows:

TABLE 7—GENERAL VALUES FOR A_1 AND A_2

Radioactive contents	A_1		A_2	
	(TBq)	(Ci)	(TBq)	(Ci)
1. Only beta or gamma emitting nuclides are known to be present	1×10^{-1}	$2.7 \times 10^{\circ}$	2×10^{-2}	5.4×10^{-1}
2. Alpha emitting nuclides, but no beta, gamma, or neutron emitters, are known to be present [1]	2×10^{-1}	5.4×10^{0}	9×10^{-5}	2.4×10^{-3}
3. Neutron emitting nuclides are known to be present or no relevant data are available	1×10^{-3}	2.7×10^{-2}	9×10^{-5}	2.4×10^{-3}

[1] If beta or gamma emitting nuclides are also known to be present, the A_1 value of 0.1 TBq (2.7 Ci) should be used.

TABLE 8—GENERAL EXEMPTION VALUES

Radioactive contents	Activity concentration for exempt material		Activity limits for exempt consignments	
	(Bq/g)	(Ci/g)	(Bq)	(Ci)
1. Only beta or gamma emitting nuclides are known to be present	1×10^{1}	2.7×10^{-10}	1×10^{4}	2.7×10^{-7}
2. Alpha emitting nuclides, but no neutron emitters, are known to be present	1×10^{-1}	2.7×10^{-12}	1×10^{3}	2.7×10^{-8}
3. Neutron emitting nuclides are known to be present or no relevant data are available	1×10^{-1}	2.7×10^{-12}	1×10^{3}	2.7×10^{-8}

■ 26. The § 173.435 table is amended by adding the entry under ''[ADD]'' and revising entries under ''[REVISE]'' in the appropriate alphabetical sequence, footnotes (a) and (c) are revised, and footnote (h) is removed and reserved to read as follows:

§ 173.435 Table of A_1 and A_2 values for radionuclides.

* * * * *

Symbol of radionuclide	Element and atomic number	A_1 (TBq)	A_1 (Ci) [b]	A_2 (TBq)	A_2 (Ci) [b]	Specific activity	
						(TBq/g)	(Ci/g)
[ADD]							
*	*	*	*	*	*	*	*
Kr-79	Krypton (36)	4.0×10^{0}	1.1×10^{2}	2.0×10^{0}	5.4×10^{1}	4.2×10^{4}	1.1×10^{6}
*	*	*	*	*	*	*	*
[REVISE]							
*	*	*	*	*	*	*	*
Cf-252		1×10^{-1}	2.7	3.0×10^{-3}	8.1×10^{-2}	2.0×10^{1}	5.4×10^{2}
*	*	*	*	*	*	*	*
Mo-99(a)(i)		1.0	2.7×10^{1}	6.0×10^{-1}	1.6×10^{1}	1.8×10^{4}	4.8×10^{5}
*	*	*	*	*	*	*	*

[a] A_1 and/or A_2 values for these parent radionuclides include contributions from daughter nuclides with half-lives less than 10 days as listed in footnote (a) to Table 2 in the ''IAEA Regulations for the Safe Transport of Radioactive Material, No. TS–R–1'' (IBR, see § 171.7 of this subchapter).

[b] The values of A_1 and A_2 in curies (Ci) are approximate and for information only; the regulatory standard units are Terabecquerels (TBq), (see § 171.10).

[c] The activity of Ir-192 in special form may be determined from a measurement of the rate of decay or a measurement of the radiation level at a prescribed distance from the source.

* * * * *

[h] [Reserved]

* * * * *

■ 27. The § 173.436 table is amended by adding the entry under ''[ADD]'' in the appropriate alphabetical sequence, revising the entry under ''[REVISE]'', and revising footnote (b) to read as follows:

§ 173.436 Exempt material activity concentrations and exempt consignment activity limits for radionuclides.

* * * * *

Symbol of radionuclide	*Element and atomic number*	*Activity concentration for exempt material (Bq/g)*	*Activity concentration for exempt material (Ci/g)*	*Activity limit for exempt consignment (Bq)*	*Activity limit for exempt consignment (Ci)*
[ADD]					
*	*	*	*	*	*
Kr-79	Krypton (36)	1.0×10^{3}	2.7×10^{-8}	1.0×10^{5}	2.7×10^{-6}
*	*	*	*	*	*
[REVISE]					
Te-121m		1.0×10^{2}	2.7×10^{-9}	1.0×10^{6}	2.7×10^{-5}
*	*	*	*	*	*

* * * * *

[b] Parent nuclides and their progeny included in secular equilibrium are listed as follows:
Sr-90 Y-90
Zr-93 Nb-93m

Zr-97 Nb-97
Ru-106 Rh-106
Ag-108m Ag-108
Cs-137 Ba-137m
Ce-144 Pr-144
Ba-140 La-140
Bi-212 Tl-208 (0.36), Po-212 (0.64)
Pb-210 Bi-210, Po-210
Pb-212 Bi-212, Tl-208 (0.36), Po-212 (0.64)
Rn-222 Po-218, Pb-214, Bi-214, Po-214
Ra-223 Rn-219, Po-215, Pb-211, Bi-211, Tl-207
Ra-224 Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64),
Ra-226 Rn-222, Po-218, Pb-214, Bi-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Ra-228 Ac-228
Th-228 Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212(0.64)
Th-229 Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
Th-nat Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Th-234 Pa-234m
U-230 Th-226, Ra-222, Rn-218, Po-214
U-232 Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
U-235 Th-231
U-238 Th-234, Pa-234m
U-nat Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Np-237 Pa-233
Am-242m Am-242
Am-243 Np-239

* * * * *

■ 28. Section 173.443 is revised to read as follows:

§ 173.443 Contamination control.

(a) The level of non-fixed contamination must be kept as low as reasonably achievable on the external surfaces of each package, conveyance, freight container, and overpack offered for transport, and the internal surfaces of each conveyance, freight container, and overpack in which inner packages or receptacles of Class 7 (radioactive) materials are offered for transport.

(1) Excluding the interior surfaces of the containment system of packages and the internal surfaces of a conveyance, freight container, tank, or intermediate bulk container dedicated to the transport of unpackaged radioactive material in accordance with § 173.427(c) and remaining under that specific exclusive use, the level of non-fixed contamination may not exceed the limits set forth in Table 9 and must be determined by either:

(i) Wiping an area of 300 cm^2 of the surface concerned with an absorbent material, using moderate pressure, and measuring the activity on the wiping material. Sufficient measurements must be taken in the most appropriate locations to yield a representative assessment of the non-fixed contamination levels. The amount of radioactivity measured on any single wiping material, divided by the surface area wiped and divided by the efficiency of the wipe procedure (the fraction of non-fixed contamination transferred from the surface to the absorbent material), may not exceed the limits set forth in Table 9 at any time during transport. For this purpose the actual wipe efficiency may be used, or the wipe efficiency may be assumed to be 0.10; or

(ii) Alternatively, the level of non-fixed contamination may be determined by using other methods of equal or greater efficiency.

(2) A conveyance used for non-exclusive use shipments is not required to be surveyed unless there is reason to suspect that it may exhibit contamination.

Table 9 is as follows:

TABLE 9—NON-FIXED EXTERNAL RADIOACTIVE CONTAMINATION LIMITS FOR PACKAGES

Contaminant	*Maximum permissible limits*		
	Bq/cm^2	*uCi/cm^2*	*dpm/cm^2*
1. Beta and gamma emitters and low toxicity alpha emitters	4	10^{-4}	240
2. All other alpha emitting radionuclides	0.4	10^{-5}	24

(b) In the case of packages transported as exclusive use shipments by rail or public highway only, except as provided in paragraph (d) of this section, at any time during transport the non-fixed contamination on the external surface of any package, as well as on the associated accessible internal surfaces of any conveyance, overpack, or freight container, may not exceed ten times the levels prescribed in paragraph (a) of this section. The levels at the beginning of transport may not exceed the levels prescribed in paragraph (a) of this section.

(c) Except as provided in paragraphs (a) and (d) of this section, each conveyance, overpack, freight container, tank, or intermediate bulk container used for transporting Class 7 (radioactive) materials as an exclusive use shipment that utilizes the provisions of paragraph (b) of this section, § 173.427(b)(4), or § 173.427(c) must be surveyed with appropriate radiation detection instruments after each exclusive use transport. Except as provided in paragraphs (a) and (d) of this section, these items may not be returned to Class 7 (radioactive) materials exclusive use transport service, and then only for a subsequent exclusive use shipment utilizing one of the above cited provisions, unless the radiation dose rate at each accessible surface is 0.005 mSv per hour (0.5 mrem per hour) or less, and there is no significant non-fixed surface contamination as specified in paragraph (a) of this section. The requirements of this paragraph do not address return to service of items outside of the above cited provisions.

(d) Paragraphs (b) and (c) of this section do not apply to any closed

transport vehicle used solely for the exclusive use transportation by highway or rail of Class 7 (radioactive) material with contamination levels that do not exceed ten times the levels prescribed in paragraph (a) of this section if—

(1) A survey of the interior surfaces of the empty vehicle shows that the radiation dose rate at any point does not exceed 0.1 mSv/h (10 mrem/h) at the surface or 0.02 mSv/h (2 mrem/h) at 1 m (3.3 feet) from the surface;

(2) Each vehicle is marked (e.g. stenciled) with the words ''For Radioactive Materials Use Only'' in letters at least 76 millimeters (3 inches) high in a conspicuous place on both sides of the exterior of the vehicle; and

(3) Each vehicle is kept closed except for loading or unloading; and

(4) Each vehicle is placarded in accordance with subpart F of part 172 of this subchapter.

(e) If it is evident that a package of radioactive material, or conveyance carrying unpackaged radioactive material, is leaking, or if it is suspected that the package, or conveyance carrying unpackaged material, may have leaked, access to the package or conveyance must be restricted and, as soon as possible, the extent of contamination and the resultant radiation level of the package or conveyance must be assessed. The scope of the assessment must include, as applicable, the package, the conveyance, the adjacent loading and unloading areas, and, if necessary, all other material which has been carried in the conveyance. When necessary, additional steps for the protection of persons, property, and the environment must be taken to overcome and minimize the consequences of such leakage. Packages, and conveyances carrying unpackaged material, which are leaking radioactive contents in excess of limits for normal conditions of transport may be removed to an interim location under supervision, but must not be forwarded until repaired or reconditioned and decontaminated, or as approved by the Associate Administrator.

■ 29. In § 173.465, paragraphs (a) and (d)(1)(i) are revised to read as follows:

§ 173.465 Type A packaging tests.

(a) The packaging, with contents, must be capable of withstanding the water spray, free drop, stacking and penetration tests prescribed in this section. One prototype may be used for all tests if the requirements of paragraph (b) of this section are met. The tests are successful if the requirements of § 173.412(j) are met.

* * * * *

(d) * * *

(1) * * *

(i) A total weight equal to five times the maximum weight of the package; or

* * * * *

■ 30. In § 173.466, paragraph (a) is revised to read as follows:

§ 173.466 Additional tests for Type A packagings designed for liquids and gases.

(a) In addition to the tests prescribed in § 173.465, Type A packagings designed for liquids and gases must be capable of withstanding the following tests in this section. The tests are successful if the requirements of § 173.412(k) are met.

* * * * *

■ 31. In § 173.469, paragraphs (b)(2)(ii), (b)(2)(iii), (d)(1) and (d)(2) are revised, and a new paragraph (e) is added to read as follows:

§ 173.469 Tests for special form Class 7 (radioactive) materials.

* * * * *

(b) * * *

(2) * * *

(ii) The flat face of the billet must be 2.5 cm (1 inch) in diameter with the edge rounded off to a radius of 3 mm ± 0.3 mm (0.12 inch ± 0.012 inch).

(iii) The lead must be of hardness number 3.5 to 4.5 on the Vickers scale and thickness not more than 25 mm (1 inch), and must cover an area greater than that covered by the specimen.

* * * * *

(d) * * *

(1) The impact test and the percussion test of this section provided that the mass of the special form material is—

(i) Less than 200 g and it is alternatively subjected to the Class 4 impact test prescribed in ISO 2919 (IBR, see § 171.7 of this subchapter), or

(ii) Less than 500 g and it is alternatively subjected to the Class 5 impact test prescribed in ISO 2919 (IBR, see § 171.7 of this subchapter); and

(2) The heat test of this section, provided the specimen is alternatively subjected to the Class 6 temperature test specified in the International Organization for Standardization document ISO 2919 (IBR, see § 171.7 of this subchapter).

(e) Special form materials that were successfully tested prior to October 1, 2014 in accordance with the requirements of paragraph (d) of this section in effect prior to October 1, 2014 may continue to be offered for transportation and transported without additional testing under this section.

■ 32. In § 173.473, paragraph (a)(1) is revised to read as follows:

§ 173.473 Requirements for foreign-made packages.

* * * * *

(a) * * *

(1) Have the foreign competent authority certificate revalidated by the U.S. Competent Authority, unless this has been done previously. Each request for revalidation must be in triplicate, contain all the information required by Section VIII of the IAEA regulations in ''IAEA Regulations for the Safe Transport of Radioactive Material, No. TS–R–1'' (IBR, see § 171.7 of this subchapter), and include a copy in English of the foreign competent authority certificate. The request and accompanying documentation must be sent to the Associate Administrator for Hazardous Materials Safety (PHH–23), Department of Transportation, East Building, 1200 New Jersey Avenue SE., Washington, DC 20590–0001. Alternatively, the request with any attached supporting documentation submitted in an appropriate format may be sent by facsimile (fax) to (202) 366–3753 or (202) 366–3650, or by electronic mail to ''*ramcert@dot.gov*.'' Each request is considered in the order in which it is received. To allow sufficient time for consideration, requests must be received at least 90 days before the requested effective date;

* * * * *

■ 33. In § 173.476, paragraph (a) is revised to read as follows:

§ 173.476 Approval of special form Class 7 (radioactive) materials.

(a) Each offeror of special form Class 7 (radioactive) materials must maintain on file for at least two years after the offeror's latest shipment, and provide to the Associate Administrator on request, a complete safety analysis, including documentation of any tests, demonstrating that the special form material meets the requirements of § 173.469. An IAEA Certificate of Competent Authority issued for the special form material may be used to satisfy this requirement.

* * * * *

■ 34. In § 173.477, paragraph (a) is revised to read as follows:

§ 173.477 Approval of packagings containing greater than 0.1 kg of non-fissile or fissile-excepted uranium hexafluoride.

(a) Each offeror of a package containing more than 0.1 kg of uranium hexafluoride must maintain on file for at least two years after the offeror's latest shipment, and provide to the Associate Administrator on request, a complete safety analysis, including documentation of any tests, demonstrating that the package meets

the requirements of § 173.420. An IAEA Certificate of Competent Authority issued for the design of the packaging containing greater than 0.1 kg of non-fissile or fissile-exempted uranium hexafluoride may be used to satisfy this requirement.

* * * * *

PART 174—CARRIAGE BY RAIL

■ 35. The authority citation for part 174 continues to read as follows:

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

■ 36. In § 174.700, paragraph (e) is removed and reserved.

■ 37. In § 174.715, paragraph (a) is revised to read as follows:

§ 174.715 Cleanliness of transport vehicles after use.

(a) Each transport vehicle used for transporting Class 7 (radioactive) materials under exclusive use conditions (as defined in § 173.403 of this subchapter) in accordance with § 173.427(b)(4), § 173.427(c), or § 173.443(b), must be surveyed with appropriate radiation detection instruments after each use. A transport vehicle may not be returned to Class 7 (radioactive) materials exclusive use transport service, and then only for a subsequent exclusive use shipment utilizing the provisions of any of the paragraphs § 173.427(b)(4), § 173.427(c), or § 173.443(b), until the radiation dose rate at any accessible surface is 0.005 mSv per hour (0.5 mrem per hour) or less, and there is no significant non-fixed contamination, as specified in § 173.443(a) of this subchapter

* * * * *

PART 175—CARRIAGE BY AIRCRAFT

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

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

■ 39. In § 175.702, paragraph (b) is revised to read as set forth below, and paragraph (c) is removed:

§ 175.702 Separation distance requirements for packages containing Class 7 (radioactive) materials in cargo aircraft.

* * * * *

(b) In addition to the limits on combined criticality safety indexes stated in § 175.700(b),

(1) The criticality safety index of any single group of packages must not exceed 50.0 (as used in this section, the term ''group of packages'' means packages that are separated from each other in an aircraft by a distance of 6 m (20 feet) or less); and

(2) Each group of packages must be separated from every other group in the aircraft by not less than 6 m (20 feet), measured from the outer surface of each group.

■ 40. In § 175.705, paragraph (c) is revised to read as follows:

§ 175.705 Radioactive contamination.

* * * * *

(c) An aircraft in which Class 7 (radioactive) material has been released must be taken out of service and may not be returned to service or routinely occupied until the aircraft is checked for radioactive substances and it is determined that any radioactive substances present do not meet the definition of radioactive material, as defined in § 173.403 of this subchapter.

* * * * *

PART 176—CARRIAGE BY VESSEL

■ 41. The authority citation for part 176 continues to read as follows:

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

■ 42. Section 176.715 is revised to read as follows:

§ 176.715 Contamination control.

Each hold, compartment, or deck area used for the transportation of low specific activity or surface contaminated object Class 7 (radioactive) materials under exclusive use conditions in accordance with § 173.427(b)(4), or § 173.427(c) must be surveyed with appropriate radiation detection instruments after each use. Such holds, compartments, and deck areas may not be used again for Class 7 (radioactive) materials exclusive use transport service, and then only for a subsequent exclusive use shipment utilizing the provisions of § 173.427(b)(4), or § 173.427(c) until the radiation dose rate at every accessible surface is less than 0.005 mSv/h (0.5 mrem/h), and the non-fixed contamination is not greater than the limits prescribed in § 173.443(a) of this subchapter.

PART 177—CARRIAGE BY PUBLIC HIGHWAY

■ 43. The authority citation for part 177 is revised to read as follows:

Authority: 49 U.S.C. 5101–5128; sec. 112 of Pub. L. 103–311, 108 Stat. 1673, 1676 (1994); sec. 32509 of Pub. L. 112–141, 126 Stat. 405, 805 (2012); 49 CFR 1.81 and 1.97.

■ 44. In § 177.843 paragraph (a) is revised to read as follows:

§ 177.843 Contamination of vehicles.

(a) Each motor vehicle used for transporting Class 7 (radioactive) materials under exclusive use conditions in accordance with § 173.427(b)(4), § 173.427(c), or § 173.443(b) of this subchapter must be surveyed with radiation detection instruments after each use. A vehicle may not be returned to Class 7 (radioactive) materials exclusive use transport service, and then only for a subsequent exclusive use shipment utilizing the provisions of any of the paragraphs § 173.427(b)(4), § 173.427(c), or § 173.443(b), until the radiation dose rate at every accessible surface is 0.005 mSv/h (0.5 mrem/h) or less and the non-fixed contamination is not greater than the level prescribed in § 173.443(a) of this subchapter.

* * * * *

PART 178—SPECIFICATIONS FOR PACKAGINGS

■ 45. The authority citation for part 178 continues to read as follows:

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

■ 46. In § 178.350, paragraph (c) is revised to read as follows:

§ 178.350 Specification 7A; general packaging, Type A.

* * * * *

(c) Each Specification 7A packaging must comply with the requirements of §§ 178.2 and 178.3. In § 178.3(a)(2) the term ''packaging manufacturer'' means the person certifying that the package meets all requirements of this section.

■ 47. Section 178.356 and §§ 178.356–1 through 178.358–6 are removed.

■ 48. Section 178.358 and §§ 178.358–1 through 178.358–6 are removed.

■ 49. Section 178.360 and §§ 178.360–1 through 178.360–4 are removed.

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Cynthia L. Quarterman,

Administrator, Pipeline and Hazardous Materials Safety Administration.

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