



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

March 17, 2023

John Woodbury
Packaging Management Council Coordinator
BGS LLC
3533 15th Street E
Lewiston, ID 83501

Reference No. 22-0127

Dear Mr. Woodbury:

This letter is in response to your November 28, 2022, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to requirements for transporting “UN3321, Radioactive material, low specific activity (LSA-II), 7.” Specifically, you request clarification on the use of portable tanks, cargo tanks, and tank cars as Industrial Package Type 2 (Type IP-2) or Industrial Package Type 3 (Type IP-3) packagings, as authorized in § 173.411.

We have paraphrased and answered your questions as follows:

- Q1. You ask whether a portable tank used as a Type IP-2 or Type IP-3 packaging, in accordance with § 173.411(b)(4), is subject to periodic testing.
- A1. The answer is yes. Section 173.411(b)(4)(ii) requires that a portable tank used as a Type IP-2 or Type IP-3 packaging must meet the standards of Chapter 6.7 of the United Nations (UN) Recommendations on the Transport of Dangerous Goods Model Regulations (UN Model Regulations) or other requirements at least equivalent to those standards. You correctly note that Chapter 6.7 requires periodic testing of UN portable tanks. The HMR also require periodic testing for Department of Transportation (DOT), Intermodal, and UN portable tanks in Part 180, Subpart G (§§ 180.601-605).
- Q2. You ask whether a portable tank used as a Type IP-2 or Type IP-3 packaging must be cleaned prior to entering radioactive material service.
- A2. This is not specifically addressed in the HMR. However, this Office understands that cleaning and purging a portable tank prior to beginning a new service is standard procedure in most circumstances. Please be aware that the HMR forbids the mixing of materials which are likely to cause a dangerous evolution of heat, or flammable or poisonous gases or vapors, or to produce corrosive materials (see §§ 173.21(e) and

173.24(e)). Additionally, if the package is not cleaned and purged, and remaining residual material from the previous load have any hazardous characteristics, then combining that material with a Class 7 hazardous material may require classification of multiple hazards per § 173.2a and may be subject to additional requirements in the HMR.

- Q3. You ask whether a cargo tank used as a Type IP-2 or Type IP-3 packaging, in accordance with § 173.411(b)(5), must conform to HMR standards for a cargo tank as provided in Part 178, Subpart J.
- A3. The answer is no. A cargo tank authorized in § 173.411(b)(5) for use as a Type IP-2 or Type IP-3 packaging is not required to be a DOT or MC specification cargo tank.
- Q4. You ask whether a tank car used as a Type IP-2 or Type IP-3 packaging, in accordance with § 173.411(b)(5), must conform to HMR standards as provided in Part 179.
- A4. The answer is no. A tank car authorized in § 173.411(b)(5) for use as a Type IP-2 or Type IP-3 packaging is not required to be a DOT specification tank car.
- Q5. You ask whether a cargo tank or tank car used as a Type IP-2 or Type IP-3 packaging must be cleaned prior to entering radioactive material service.
- A5. See answer A2.
- Q6. You ask whether a metal intermediate bulk container (IBC) used as a Type IP-2 or Type IP-3 packaging, in accordance with § 173.411(b)(7), is subject to periodic testing.
- A6. The answer is yes. A UN specification metal IBC used as a Type IP-2 or Type IP-3 packaging, in accordance with § 173.411(b)(7), is subject to periodic test and inspection requirements as described in the UN Model Regulations 6.5.4.4 and Part 180, Subpart D (§§ 180.350-352).
- Q7. You ask whether a metal IBC used as a Type IP-2 or Type IP-3 packaging must be cleaned prior to entering radioactive material service.
- A7. See answer A2.
- Q8. You ask whether a portable tank, cargo tank or tank car, and metal IBC authorized as a Type IP-2 or Type IP-3 packaging in §§ 173.411(b)(4), (5), and (7)—respectively—is subject to the requirements in § 173.411(b)(2) for use as a Type IP-2 packaging or § 173.411(b)(3) for use as a Type IP-3 packaging.

A8. The answer is no. A portable tank, cargo tank or tank car, and metal IBC authorized in §§ 173.411(b)(4), (5), and (7)—respectively—as a Type IP-2 or Type IP-3 packaging, must meet the general design requirements of an Industrial Package Type 1 packaging as a criterion within each packaging paragraph, but is not subject to the general design requirements of §§ 173.411(b)(2) and (3). The provisions of §§ 173.411(b)(4), (5), and (7) are to be used as an alternative means of Type IP-2 and Type IP-3 packaging certification.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in blue ink, appearing to read "Dirk Der Kinderen".

Dirk Der Kinderen
Chief, Standards Development Branch
Standards and Rulemaking Division

Patrick

22-0127

From: [INFOCNTR \(PHMSA\)](#)
To: [Dodd, Alice \(PHMSA\)](#); [Hazmat Interps](#)
Subject: FW: Request for Interpretation
Date: Tuesday, November 29, 2022 3:30:09 PM
Attachments: [DOT LOI IP2 11-28-22.pdf](#)

Hi Alice and team,
Please see the LOI request below. Let me know if there are any issues viewing the attachment.
Thank you.
-Rachel (HMIC)

From: John Woodbury <jwoodbury@bgs-llc.com>
Sent: Monday, November 28, 2022 3:04 PM
To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>
Cc: Prakash.Kunjeer@em.doe.gov; Shenk, Julia <julia.shenk@em.doe.gov>
Subject: Request for Interpretation

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Please prove interpretation.

Thanks,

John B. "Woody" Woodbury
Packaging Management Council Coordinator
jwoodbury@bgs-llc.com
(509) 438-6342

November 28, 2022

Standards and Rulemaking Division
Pipeline and Hazardous Materials Safety Administration (PHMSA)
U.S. Department of Transportation (DOT)
East Building
1200 New Jersey Avenue, SE
Washington, DC 20590-0001

Request for Clarification of the Industrial Package Certifications and Tests for Portable Tanks, Cargo Tanks, Tank Cars, or Metal Intermediate Bulk Containers

Dear Sir/Madam:

The offsite transport of various radioactive liquid streams in large quantities for treatment and disposal is being evaluated. Most of those liquid streams are categorized as LSA-II based on the A2/g concentration. As part of the offsite transport options, consideration is being given to shipping these various radioactive liquid streams in Type IP-2 or possibly Type IP-3 packages as defined in 49 CFR 173.411. In reviewing the language in 49 CFR 173.411, it is unclear on exactly how to interpret the language in that section as it applies to the necessary certification and test requirements specifically for portable tanks, cargo tanks or tank cars, freight containers, and metal intermediate bulk containers. 49 CFR 173.411(a) provides a general requirement for industrial packages and 49 CFR 173.411(b) provides industrial package certification and test requirements. 49 CFR 173.411(b)(4) addresses industrial package certification and tests for portable tanks. 49 CFR 173.411(b)(5) addresses industrial package certification and tests for cargo tanks and tank cars. 49 CFR 173.411(b)(6) addresses industrial package certification and tests for freight containers (included for completeness although not applicable for LSA-II liquids). 49 CFR 173.411(b)(7) addresses industrial package certification and tests for metal intermediate bulk containers.

The 49CFR173.411(a) requirement states "Each industrial package must comply with the requirements of this section which specifies package tests... applicable to...IP-1...IP-2, and...IP-3 [packages]." 49 CFR 173.411(b)(2) states "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." 49 CFR 173.411(b)(4)-(7) each explicitly requires that the container type covered in that section "...meets the requirements for Type IP-1 packages specified in paragraph (b)(1);", however these same sections do not have an explicit requirement stating that the container type must meet the requirements for Type IP-2 requirements under 49 CFR 173.411(b)(2) or Type IP-3 requirements under 49 CFR 173.411(b)(3).

For reference, the International Atomic Energy Association's (IAEA) Specific Safety Requirement No. SSR-6, *Regulations for the Safe Transport of Radioactive Materials*, 2018 Edition, at paragraphs 626-630 covers "Alternative Requirements for Type IP-2 and Type IP-3" and discusses portable tanks, tanks, freight containers, and metal IBCs. Those alternative requirements listed in those paragraphs do not invoke the tests specified in paragraph 624 for IP-2 or paragraph 625 for IP-3. For clarification the tests referenced in SSR-6 paragraph 624

(for IP-2) and paragraph 625 (for IP-3) are similar to those specified via 49 CFR 173.411(b)(2) and 49CFR173.411(b)(3), respectively.

Questions:

1. 49 CFR 173.411(b)(4) states, "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."

Chapter 6.7 includes inspection requirements; however, 49 CFR 178.274, Specifications for portable tanks, does not require inspections of portable tanks.

Does DOT expect that each portable tank that is going to be used as an IP-2 or IP-3 have a current inspection? Also, if these portable tanks have been used to ship another commodity, do these portable tanks have to be cleaned prior to loading with an IP-2 or IP-3 liquid?

2. 49 CFR 173.411(b)(5) states, "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.

Although, not explicitly stated, must the cargo tanks have to meet the requirements of 49 CFR 178 subpart J and tank cars the requirements of 49 CFR 179? Also, if these tanks have been used to ship another commodity, do they have to be cleaned prior to loading with an IP-2 or IP-3 liquid?

3. 49 CFR 173.411(b)(7) states, "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:

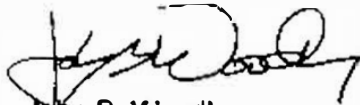
- (A) Loss or dispersal of the radioactive contents; and
- (B) More than a 20% increase in the maximum radiation level at any external surface of the intermediate bulk container.

Does DOT expect that each metal intermediate bulk container that is going to be used as an IP-2 or IP-3 have a current inspection? Also, if these bulk containers have been used to ship another commodity, do these bulk containers have to be cleaned prior to loading with an IP-2 or IP-3 liquid?

4. In 49 CFR 173.411(b)(4), (5), (6) and (7), the requirement to meet 49 CFR 173.411(b)(1) is explicitly specified but the requirement to meet 49 CFR 173.411(b)(2) or (3) is not specified. Is it correct to infer that the requirements specified for the various packagings as described in 49 CFR 173.411(b)(4), (5), (6) and (7) are sufficient and it is not necessary to meet those requirements specified in 49 CFR 173.411(b)(2) and (3)?

Your clarification of this issue will be appreciated.

Respectfully,



John B. Woodbury
Packaging Management Council Coordinator
3533 15th Street E
Lewiston, ID 83501
Phone: 509-438-6342
Email: jwoodbury@bgs-llc.com