



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/20)**

Montréal, 19 to 23 October 2020

Agenda Item 2: Managing air-specific safety risks and identifying anomalies

2.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284)* for incorporation in the 2023-2024 Edition

**ADDITIONAL INFORMATION FOR RADIOACTIVE MATERIAL ON THE DANGEROUS
GOODS TRANSPORT DOCUMENT**

(Presented by S. Bitossi)

SUMMARY

The Technical Instructions do not provide detail sufficient for the completion of a dangerous goods transport document where an A₁ or A₂ value for radioactive material is used from Table 2-13 for a radionuclide not specifically listed in Table 2-12. This has led to denial of shipment during the operator dangerous goods acceptance process. It is proposed that where the A₁ or A₂ value is applied using Table 2-13 that this is included as one of the additional requirements for a dangerous goods transport document and specified in Part 5;4.1.5.8.1. In addition, a note is proposed for 5;4.1.5.7.1 a) to draw the shippers attention towards the proposed additional provisions within 5;4.1.5.8.1.

Action by the DGP-WG: The DGP is invited to review the proposed amendments for additional information to be provided on the dangerous goods transport document relating to radionuclides where A₁ or A₂ is determined using Table 2-13 and recommend its inclusion in the 2023-2024 Edition of the Technical Instructions.

1. INTRODUCTION

1.1 On 21 April 2020, a consignment of UN 2915 — **Radioactive material, Type A package**, was denied shipment at Melbourne Airport as the radionuclide, Zirconium-89, was not listed in Table 2-12. Basic radionuclides values for individual radionuclides of the Technical Instructions.

1.2 On 16 June 2020, a consignment of UN 2915 — **Radioactive material, Type A package**, was denied shipment at Melbourne Airport as the radionuclide, Zirconium-89, was not listed in Table 2-12. Basic radionuclides values for individual radionuclides of the Technical Instructions. This second consignment had been lodged by a different shipper with a different air operator.

1.3 These consignments were both determined as being for urgent medical reasons and that the denial of shipment is to be avoided and should be resolved in the public interest.

1.4 In the investigation of the denial of shipment it was found that on both occasions the basis for rejection during the operator dangerous goods acceptance checklist process was due to the radionuclide not being found in Table 2-12. Basic radionuclides values for individual radionuclides.

1.5 Part 2;7.2.2 provides the following:

7.2.2 Determination of basic radionuclide values

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7.2.2.2 For individual radionuclides:

- a) which are not listed in Table 2-12, determination of the basic radionuclide values referred to in 7.2.2.1 requires multilateral approval. For these radionuclides, activity concentration limits for exempt material and activity limits for exempt consignments must be calculated in accordance with the principles established in the Radiation Protection and Safety of Radiation Sources: *International Basic Safety Standards*, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014). It is permissible to use the 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. Alternatively, the radionuclide values in Table 2-13 may be used without obtaining competent authority approval.

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1.6 Furthermore, Part 2; 7.2.2.6 states:

7.2.2.6 For individual radionuclides or for mixtures of radionuclides for which relevant data are not available, the values shown in Table 2-13 must be used.

1.7 The root cause of the denial of shipment has been assessed as being due to absence of a requirement for the shipper to communicate the use of Table 2-13 as the source of the A_1 or A_2 value used when ensuring the compliance of the package.

1.8 In order to prevent further denial of shipment due to the same cause it is proposed that the process for completion of the dangerous goods transport document includes a requirement to provide additional information where Table 2-13 has been used for an individual radionuclide not listed in Table 2-12.

2. ACTION BY THE DGP-WG

2.1 The DGP is invited to consider the addition of:

- a) the proposed note after Part 5; 4.1.5.7.1 a); and
- b) the proposed new text of Part 5; 4.1.5.8.1 g)

as shown in the appendix to this working paper, for inclusion in the 2023-2024 Edition of the Technical Instructions, taking into consideration the denial of shipment identified in this paper.

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APPENDIX

PROPOSED AMENDMENT TO PART 7 OF THE TECHNICAL INSTRUCTIONS

Part 5

SHIPPER'S RESPONSIBILITIES

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Chapter 4

DOCUMENTATION

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4.1.5 Information required in addition to the dangerous goods description

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4.1.5.7 Radioactive material

4.1.5.7.1 The following information must be included for each consignment of Class 7 material, as applicable, in the order given:

- a) The name or symbol of each radionuclide or, for mixtures of radionuclides, an appropriate general description or a list of the most restrictive nuclides;

Note.— For radionuclides not listed in Table 2-12, refer to 5:4.1.5.8.1 g) for additional information required on the dangerous goods transport document.

- b) A description of the physical and chemical form of the material, or a notation that the material is special form radioactive material or low dispersible radioactive material. A generic chemical description is acceptable for chemical form;

Note.— For empty Type B(U) or Type B(M) packages as specified in the Note to 2;7.2.4.1.1.7, the name or symbol of the radionuclide of the shielding material followed by the physical and chemical form must be included (e.g. U-dep., solid, metal oxide) in which case the indicated radionuclide may differ from the radionuclide(s) authorized in the package design certificate.

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4.1.5.8 Additional requirements

4.1.5.8.1 The dangerous goods transport document must also contain:

- a) except for radioactive material, the packing instruction applied. For shipments of lithium batteries prepared in accordance with Section IB of Packing Instruction 965 or Packing Instruction 968, the letters "IB" must be added following the packing instruction number;

*Note.— Packing Instruction 622 from the 2019-2020 Edition of these Instructions was renumbered as 621 in this edition. Until 31 March 2021, Packing Instruction 622 may continue to be indicated on the dangerous goods transport document when applied to UN 3291, **Biomedical waste, n.o.s., Clinical waste, unspecified, n.o.s., Medical waste, n.o.s., or Regulated medical waste, n.o.s.***

- b) when applicable, reference to Special Provision A1, A2, A4, A5, A51, A78, A190, A191, A201, A202, A208, A211 or A212;
- c) a statement indicating that the shipment is within the limitations prescribed for either passenger and cargo aircraft or cargo-only aircraft, as appropriate;

Note.— To qualify as acceptable for transport aboard passenger aircraft, passenger aircraft packing instruction number(s) must be used, and the package must not bear the "Cargo aircraft only" label. To qualify as acceptable for transport aboard cargo-only aircraft, cargo aircraft packing instruction number(s) must be used, and the package must bear the "Cargo aircraft only" label; or passenger aircraft instruction number(s) must be shown and no "Cargo

aircraft only” label applied. However, where the packing instruction number(s) and the permitted quantity per package are identical for passenger and cargo aircraft, the “Cargo aircraft only” label should not be used.

- d) special handling information, when appropriate;
- e) an indication that an overpack has been used, when appropriate;~~and~~
- f) the “Q” value rounded up to the first decimal place, if substances are packed in accordance with 3;4.3.3 or 4;1.1.9 e); and
- g) for radioactive material, where a radionuclide value in Table 2-13 is used for an individual nuclide not listed in Table 2-12, the type of radioactive contents and the use of Table 2-13 must be referenced. For example: “Table 2-13 used. Only beta- or gamma- emitting nuclides are known to be present”.

— END —