

COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS AND ON THE GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS

Sub-Committee of Experts on the Transport of Dangerous Goods

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HARMONISATION WITH IAEA REGULATIONS FOR THE SAFE TRANSPORT OF RADIOACTIVE MATERIAL

Request for clarification in respect of the IAEA Regulations

Transmitted by the expert from Australia

Introduction

1. Document ST/SG/AC.10/c.3/2005/19 seeks to promote further harmonisation between the Model Regulations and the IAEA Regulations, the current version being TS-R-1, 1996 edition (as amended 2003). Australia supports this paper. As noted in section 3 of the paper it is incumbent on the Sub-Committee to inform the IAEA where it considers amendment is required within TS-R-1. In this respect we would like to draw attention to three issues where it appears amendment may be required.

Issue 1: Section 526.(a)

2. In section 526.(a) of TS-R-1, 1996 edition (as amended 2003) the default radiation value applied to ores and physical concentrates of uranium and thorium is given as 0.4 mSv/h where the default value for chemical concentrates of thorium alone is 0.3 mSv/h and chemical concentrates of uranium have a default value of 0.02 mSv/h.
3. Experience in Australia suggests the default value for chemical concentrates of uranium are correct as the Transport Index (TI) calculated on the basis of measured values has always been lower, but not by a significant margin. The same cannot be said of the default value applied to ores and physical concentrates of uranium and thorium. Where the TI of a single package of ores and physical concentrates of uranium and thorium is calculated using the default value it results in a TI of 40 which excludes the shipment of this package, except under exclusive use and significantly reduces the number of packages that can be carried in a conveyance. When the TI of packages of ores and physical concentrates of uranium and thorium is calculated using the measure values the result is closer to that found for chemical concentrates of uranium.

Proposal

4. In view of this anomaly Australia asks the Sub-Committee to seek clarification from the IAEA as to whether the default radiation value for ores and physical concentrates of uranium and thorium as shown in section 526.(a) of TS-R-1, 1996 edition (as amended 2003) is correct. If, as it is considered likely, this is not the case then the IAEA should be asked to make the appropriate amendments that would allow subsequent amendment of the UN Model Regulations.

Issue 2: Section 402 and Table I

5. Krypton-79 (Kr-79) is not covered within table I of the current IAEA Regulations for the Safe Transportation of Radioactive Material and is therefore subject to table II. This being noted IATA has previously requested that ICAO include Kr-79 in the ICAO Technical Instructions relating to the transport of radioactive material. ICAO agreed with this proposal and changes were adopted in the 1999/2000 edition of the ICAO technical instructions, allowing for the transportation of Kr-79 up to the following limits: A₁ 4TBq, A₂ 1TBq.
6. As a result ICAO made a submission to the IAEA that changes be made to the IAEA Regulations for the Safe Transportation of Radioactive Material to the effect that Krypton-79 be included in the "Table of Common Radionuclides" with the limits described above. This change has not been made and the entry has since been deleted from the ICAO Technical Instructions. The International Commission on Radiological Protection, Publication 68, shows the Effective Dose rates for Inert Gases in Annexe D. These effective dose rates per unit air concentration (Sv per day / Bq per metre cube) for the radionuclides listed in table I (table 2.7.7.2.1 in the 13th edition of the Model Regulations) and for Krypton-79 are given in the table below. This table also lists the A₂ values with the A₂ value of Krypton-79 being taken from TS-R-1, 1996 edition (as amended 2003).

| Nuclide | Effective dose rate per unit air concentration | A ₂ Value |
|---------|--|----------------------|
| Kr-81 | 2.1E-11 | 40TBq (1000Ci) |
| Kr-85m | 5.9E-10 | 6TBq (100Ci) |
| Kr-85 | 2.2E-11 | 10TBq (200Ci) |
| Kr-87 | 3.4E-9 | 0.2TBq (5Ci) |
| Kr-79 | 9.7E-10 | 0.02TBq (0.5Ci)* |

* Taken from Table II, TS-R-1, 1996 edition (as amended 2003)

7. It has been suggested that these values indicate that the activity limitation for Krypton-79 prescribed in table II (table 2.7.7.2.2 in the 13th edition of the Model Regulations) is too restrictive compared with other nuclides of Krypton considering the relative effective dose rates. This fact appears to have been recognised through Competent Authority Approvals granted by the Competent Authorities of the United Kingdom, South Africa and Norway allowing the transportation of Krypton-79 up to the values shown below.

| Radioisotope | A ₁ Value (TBq) | A ₂ Value (TBq) | Activity concentration for exempt material (Bq/g) | Activity limit for exempt consignment (Bq) |
|--------------------------------|-------------------------------|-------------------------------|--|---|
| Krypton 79 (⁷⁹ Kr) | 4 | 1 | 10 ³ | 10 ⁵ |

8. This table was copied from the United Kingdom approval GB/K79/RV-96 issued on the 26th of February 2004 and valid until the end of February 2007. Australia has endorsed this approval. The draft amendments to TS-R-1 to be included in the 2007 have included an entry for Kr-79. This entry mirrors the values accepted by the United Kingdom, South Africa, Norway and Australia with the exception that the A₂ value is given as 2 x 10⁰ as opposed to 1 x 10⁰. The reasoning behind this variation has not been determined.

Proposal

9. In view of this anomaly Australia asks the Sub-Committee to seek clarification from the IAEA as to whether the proposed Kr-79 entry in Table I of the draft 2007 edition of TS-R-1 is correct. If this is not the case then the IAEA should be asked to make the appropriate amendments that would allow subsequent amendment of the UN Model Regulations.

Issue 3: Draft Amendments to Section 312.

10. The draft amendments to TS-R-1 1996 edition (as amended 2003) proposed for inclusion in the 2007 edition of TS-R-1 revised the wording of section 312 (now renumbered as section 310) to delete the word "international" from the sentence:

"For international consignments of this type multilateral approval must be required".

11. Noting that the definition of "multilateral approval" relates to the country of origin of 'the design' (of the package) or 'shipment', it has been questioned as to whether multilateral approval would be necessary for a domestic transport operation. Under the proposed wording, where a package is used that has not been approved by the country within whose borders the shipment is to take place, then approval must be sought from the country issuing the design approval despite the fact the transport operation is purely domestic in nature.
12. The ICAO Working Group on radioactive materials has decided to seek clarification from the IAEA to determine if the deletion of the word "international" from section 312 (now renumbered as section 310) was intentional and whether approval for the package had to be sought for transport within a State where this State was not the one that approved the package design.

Proposal

13. In view of this anomaly Australia asks the Sub-Committee to seek clarification from the IAEA as to whether the intent of the revision to section 312 (now renumbered as section 310) proposed for the 2007 edition of TS-R-1 is that approval is necessary for the package regardless of whether the transport operation is domestic or international in nature. If this is not the case then the IAEA should be asked to make the appropriate amendments that would allow subsequent amendment of the UN Model Regulations.
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