



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

Forty-second session

Geneva, 3 – 11 December 2012

Item 4 of the provisional agenda

Cooperation with the International Atomic Energy Agency

Uranium hexafluoride samples

Note by the secretariat¹

1. The question of classification and transport of samples of uranium hexafluoride has been discussed by the IAEA and the Sub-Committee since 2008. Background information on these discussions may be found in the following Sub-Committee documents and reports.

Thirty-fourth session (1–9 December 2008)

ST/SG/AC.10/C.3/2008/99 (Secretariat)

ST/SG/AC.10/C.3/68, paras 92–93

2. At this session, the Sub-Committee was informed that the applicable regulations were unclear as concerns the transport of uranium hexafluoride packed in quantities of less than 100 g in packages meeting the conditions for radioactive material excepted packages. It was unclear whether this substance had to be transported under UN No. 2978, or as an excepted package under UN No. 2910, or because of special provision 290 under another UN number linked to the other hazardous properties of the substance such as corrosivity toxicity and oxidizing properties in which case it was also unclear how to classify this substance (e.g. under UN Nos 3288, 3086, 3290, 3260, 3084, 2923, etc ...).

¹ In accordance with the programme of work of the Sub-Committee for 2011–2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76, para. 116 and ST/SG/AC.10/38, para. 16).

Thirty-eighth session (29 November – 7 December 2010)

ST/SG/AC.10/C.3/2010/78 (IAEA)

Informel document: INF.29 (Sweden)

ST/SG/AC.10/C.3/76, para. 95

3. At this session, the IAEA proposed to assign a new specific UN number (Class 7, subsidiary hazard of Class 8) in the 17th revised edition of the Recommendations on the Transport of Dangerous Goods to be published in 2011. This was not agreed because the IAEA had not yet clarified what the transport conditions should be.

Thirty-ninth session (20–24 June 2011)

Informal documents: INF.8 and Adds 1–3
and INF.29 (IAEA)

ST/SG/AC.10/C.3/78, paras 82–86

4. At this session the IAEA again requested a new UN number, and was invited to submit a proposal addressing transport conditions in the light of the comments made by the Sub-Committee at the previous session.

Fortieth session (28 November – 7 December 2011)

ST/SG/AC.10/C.3/2011/46 (IAEA)

Informal documents: INF.18 (Secretariat)
INF.25 (IAEA)
INF.36 (Austria)
INF.49 (Lunchtime working group)

ST/SG/AC.10/C.3/80, paras 79–88

5. At this session, the IAEA proposed a new entry in Class 7 with a subsidiary risk of Class 8 as a preferred option, and an alternative option for an entry in Class 8 with a subsidiary risk of Class 7 since this would be more consistent with the general rule of classification of radioactive material in excepted packages possessing other hazards (Special Provision 290). The Sub-Committee agreed to assign a specific UN number that could be introduced in the forthcoming 2012 version of the IAEA Regulations for the Safe Transport of Radioactive Material, but no decision was made concerning the identification of the main class since some concerns were expressed at the idea of introducing provisions which could contradict the general rule. Some experts considered that a possible hazard of Division 6.1, packing group I should also be taken into consideration.

Forty-first session (25 June – 4 July 2012)

Informal documents: INF.52 (IAEA)
INF.71/Rev.1 (United States of America on behalf of a
lunchtime working group)
INF.73 (Secretariat)

ST/SG/AC.10/C.3/82, paras 132–138

6. At this session the IAEA secretariat proposed in INF.52, that the new entry should be in Class 8 on the grounds that the proposal should be consistent with current principles, with the goal of dealing with the more significant issue of reviewing the principles in the next biennium, after investigation of the use of LQ and EQ provisions for radioactive material, the appropriate marking and labelling of excepted packages and the possible need to revise Special Provision 290. The IAEA secretariat believed that the proposal for

consideration of a Division 6.1 hazard was not appropriate at that time but agreed that it warranted consideration.

7. The proposal was discussed by a working group and on the basis of the conclusions of the working group (INF.71/Rev.1), the Sub-Committee agreed that:

- (a) These samples should be classified in Class 7 with a subsidiary risk of Class 8;
- (b) The words: "RADIOACTIVE MATERIAL, EXCEPTED PACKAGE" should be deleted from the proper shipping name.

It requested the secretariat to review Special Provision 369 proposed by the group, which was done during the session (INF.73) and agreed that the proposal prepared by the secretariat should be transmitted to the IAEA Transport Safety Standards Committee TRANSSC for comments and feedback.

8. The proposal was discussed by TRANSSC at its twenty-fourth session (16-20 July 2012).

9. TRANSSC considered that the entry should be included in Class 8, as proposed by the IAEA secretariat in INF.52, but expressed concern at the fact that the material might not be identified as radioactive during transport since no Class 7 label/markings was required and the information that the material was radioactive had disappeared from the proper shipping name.

10. It recommended classification as Class 8 with subsidiary hazard of Class 7; appending the phrase "RADIOACTIVE MATERIAL, EXCEPTED PACKAGE" to the end of the proper shipping name; and the secretariats to draft a new special provision 369.

11. As a consequence, the secretariat has prepared, in cooperation with the IAEA secretariat, new proposed amendments, reproduced in the annex to this document, for consideration by both TRANSSC at its twenty-fifth session (29 October – 2 November 2012) and the Sub-Committee.

Annex

Proposed text

Chapter 1.5

1.5.1.5.1 At the end of the introductory sentence, before (a), insert ", except for UN 3507, URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE where the additional requirements of special provision 369 of Chapter 3.3 shall be met".

Chapter 2.0

2.0.3.2 Amend the last sentence to read as follows:

"For radioactive material in excepted packages, except for UN 3507, URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, special provision 290 of chapter 3.3 applies."

Chapter 2.7

Table 2.7.2.1.1, under "Excepted packages" add the following new entry:

"UN 3507 URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, less than 0.1 kg per package, non-fissile or fissile-excepted".

Table 2.7.2.1.1, under "uranium hexafluoride", add the following note at the end:

"NOTE: For uranium hexafluoride in excepted packages see UN 3507 under excepted packages."

2.7.2.4.1.1 Amend to read as follows:

"2.7.2.4.1.1 A package may be classified as excepted package if it meets one of the following conditions:

- (a) It is an empty package having contained radioactive material;
- (b) It contains instruments or articles not exceeding the activity limits specified in Table 2.7.2.4.1.2;
- (c) It contains articles manufactured of natural uranium, depleted uranium or natural thorium;
- (d) It contains radioactive material not exceeding the activity limits specified in Table 2.7.2.4.1.2;
or
- (e) It contains less than 0.1 kg of uranium hexafluoride not exceeding the activity limits specified in column 4 of Table 2.7.2.4.1.2."

[IAEA: 422]

Insert a new 2.7.2.4.1.5 to read as follows:

"2.7.2.4.1.5 Uranium hexafluoride not exceeding the limits specified in column 4 of Table 2.7.2.4.1.2 may be classified under UN 3507 URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, less than 0.1 kg per package, non-fissile or fissile-excepted, provided that the conditions of 2.7.2.4.1.4 (a)–(b) are met."

Renumber existing 2.7.2.4.1.5 as 2.7.2.4.1.7

2.7.2.4.5: Amend to read as follows:

"2.7.2.4.5 *Classification of uranium hexafluoride*

2.7.2.4.5.1 Uranium hexafluoride shall only be assigned to:

(a) UN No 2977, RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, FISSILE;

(b) UN No 2978, RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, non-fissile or fissile-excepted; or

(c) UN No 3507, URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE less than 0.1 kg per package, non-fissile or fissile-excepted, in the case of uranium hexafluoride in quantities of less than 0.1 kg packaged and in an excepted package.

2.7.2.4.5.2 The contents of a package containing uranium hexafluoride shall comply with the following requirements:

(a) For UN Nos 2977 and 2978, the mass of uranium hexafluoride shall not be different from that allowed for the package design, and for UN 3507, the mass of uranium hexafluoride shall be less than 0.1 kg;

(b) The mass of uranium hexafluoride shall not be greater than a value that would lead to an ullage smaller than 5% at the maximum temperature of the package as specified for the plant systems where the package shall be used; and

(c) The uranium hexafluoride shall be in solid form and the internal pressure shall not be above atmospheric pressure when presented for transport."

Chapter 3.2, Dangerous goods list

For UN 2910 Delete "325" and insert "368" in column (6).

Add the following new entry:

UN No.	Name and description	Class or division	Subsidiary risk	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs	
								Packing instruction	Special packing provisions
3507	URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, less than 0.1 kg per package, non-fissile or fissile-excepted	8	7	I	317 369	0	E0	P701	

Chapter 3.3

Add the following new special provisions:

"368 In the case of non-fissile or fissile-excepted uranium hexafluoride, the material shall be classified under UN 3507 or UN 2978."

"369 In accordance with 2.0.3.2, this radioactive material in excepted package possessing corrosive properties is classified in Class 8 with a subsidiary risk of Class 7.

Uranium hexafluoride may be classified under this entry only if the conditions of 2.7.2.4.1.5, 2.7.2.4.5.2 and, for fissile-excepted material, of 2.7.2.3.6 are met.

In addition to the provisions applicable to the transport of Class 8 substances, the only other provisions specific to the transport of radioactive material in excepted packages that shall apply are those of 5.1.3.2, 5.1.5.2.2, 6.4.4, 7.1.8.5.1 to 7.1.8.5.4 and 7.1.8.6.1.

No Class 7 label is required to be displayed.”

Chapter 4.1

4.1.4.1 Insert the following new packing instruction:

P701	PACKING INSTRUCTION	P701
This instruction applies to UN 3507.		
<p>The following packagings are authorized provided that the general provisions of 4.1.1 and 4.1.3 and the special packing provisions of 4.1.9.1.2, 4.1.9.1.4 and 4.1.9.1.7 are met:</p> <p>Combination packagings consisting of:</p> <p>(a) Metal or plastic primary receptacle(s); in</p> <p>(b) Leakproof rigid secondary packaging(s); in</p> <p>(c) A rigid outer packaging:</p> <p style="padding-left: 40px;">Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</p> <p style="padding-left: 40px;">Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2);</p> <p style="padding-left: 40px;">Jerricans (3A2, 3B2, 3H2).</p>		
<p>Additional requirements:</p> <p>1. Primary inner receptacles shall be packed in secondary packagings in a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings shall be secured in outer packagings with suitable cushioning material to prevent movement. If multiple primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated so as to prevent contact between them;</p> <p>2. The contents shall comply with the provisions of 2.7.2.4.5.2;</p> <p>3. The provisions of 6.4.4 shall be met.</p>		
<p>Special packing provision:</p> <p>In the case of fissile-excepted material, the limits specified in 2.7.2.3.5 and 6.4.11.2 shall be met.</p>		