

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 Globally Harmonized
System of Classification and Labelling of Chemicals

7 December 2011

Twenty-second session

Geneva, 7 (p.m)–9 June 2011

Items 2 and 4 of the provisional agenda

Work of the Sub-Committee of Experts on the Transport of Dangerous Goods on its fortieth session

Note by the secretariat

The Sub-Committee of Experts on the Transport of Dangerous Goods (TDG Sub-Committee) considered during its fortieth session (28–7 (a.m) December 2011) the following matters of interest to the GHS Sub-Committee:

- (a) Issues on the agenda of the GHS Sub-Committee:
 - (i) Amendments to the classification flowchart/decision logic for self-reactive substances and organic peroxides;
 - (ii) Classification of desensitized explosives for supply and use
 - (iii) Criteria for water-reactivity
 - (iv) Substances and mixtures with explosive properties which are exempted from classification as explosives
 - (v) Corrosivity criteria
- (b) Other issues of interest to the GHS Sub-Committee:
 - (i) Classification of plastics emitting flammable vapours (UN Nos. 2211 and 3314 (POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour and PLASTICS MOULDING COMPOUNDS, in dough, sheet or extruded rope form evolving flammable vapour)
 - (ii) Provisions for uranium hexafluoride
 - (iii) Revised proposals for the descriptions of labels, placards, symbols, markings and marks
 - (iv) Issues related to fireworks

I. Issues on the agenda of the GHS Sub-Committee

A. Amendments to the decision logic for self-reactive substances and organic peroxides

Document: ST/SG/AC.10/C.3/2011/29 - ST/SG/AC.10/C.4/2011/5 (ICCA)

15. Several delegations noted that there was a contradiction in alternative 1 between the approaches proposed for the Model Regulations and GHS, and that there were also some contradictions between the proposed diagram and the conditions of transport, for example in respect of the quantities authorized in the packagings under instruction P520. Following the discussion, **the representative of ICCA withdrew the proposal and indicated that he would submit a new one along the lines of alternative 2, without necessitating an amendment to the principles used for classification.**

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.1).

B. Classification of desensitized explosives for supply and use

Informal document: -TDG/40/INF.7 – GHS/22/INF.10 (Germany)

117. The Sub-Committee noted that the expert from Germany regretted the lack of support for further progress on this issue. Basic principles had been agreed in 2007-2008, but these principles had been put into question by some experts in December 2008 and it was agreed to follow a different approach subject to the provision of relevant data supporting or contradicting this approach. However, no test data nor test results had been provided since then.

118. The Sub-Committee confirmed its interest in pursuing the work and urged the interested delegations to provide relevant data, otherwise it might be more appropriate to revert back to the original approach. **It was agreed that some of the working time of the Working Group on Explosives should be devoted to this issue at the next session and that the Netherlands delegation should draw this to the attention of the Chairman of the Explosives Working Group on Explosives in order that the IGUS group could also consider this issue. The Working Group should bear in mind that this work had to be carried out in the GHS context and not only in the transport perspective.**

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.11, as amended).

C. Criteria for water-reactivity

Informal documents: TDG/40/INF.8 – GHS/22/INF.11 (Germany)
TDG/40/INF.38 – GHS/22/INF.22 (United States of America)

103. The Sub-Committee noted the progress report submitted by the expert from Germany, notably the need for additional cooperation between testing laboratories for improving the N.5 testing method for measuring the rate of gas evolution on contact with water, and contribution from toxicologists once the N.5 method has been improved in order to assess health hazards.

104. The Sub-Committee noted that the United States Transportation Research Board (US TRB) had secured funding for a research programme in this respect. It would therefore be useful to involve the contractors in the Sub-Committee work.

105. The Sub-Committee concluded that all available information on test methods and results should be transmitted as soon as possible to the expert from Germany. **A working group session, with participation of the US TRB contractor, could be organized in parallel to the next session, in order to consider all information available and define further steps, on the understanding that the work on this subject would continue during the next biennium. This meeting should also be brought to the attention of the GHS Sub-Committee.**

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.9).

D. Substances and mixtures with explosive properties which are exempted from classification as explosives

Informal document: TDG/40/INF.17 – GHS/22/INF.14 (Germany, USA and Canada)

119. Several delegations felt that the best way to deal with communicating explosive properties of substances which are exempted from classification as explosives for transport and storage was to convey the information through safety data sheets for the information of users once the substances are taken out of the packaging.

120. **The Sub-Committee agreed that this issue may require further discussions for a longer term approach, but recommended the addition for a note to Table 2.1.2 of section 2.1.3 of the GHS as a short-term solution** (see annex 1).

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.11 and ST/SG/AC.10/C.3/2011/CRP.4/Add.4).

E. Corrosivity criteria

Informal documents:

- INF.14 (submitted at the 39th session)
- INF.33 and Add.1 (United Kingdom)
- INF.9 (ICCA)
- INF.10 (ICCA)
- INF.29 (ICPP)

135. The Sub-Committee took note of the report on the work of the Joint TDG/GHS correspondence group on corrosivity (INF.33 and Add.1) and related comments and proposals that would be discussed by the Joint GHS/TDG Working Group on corrosivity criteria during this session.

136. The discussion showed that there was no defined position of the Sub-Committee, for the transport perspectives, on the various issues raised as regards the transport sector. Some experts were reluctant to the development of an extensive GHS list, since this would be time and resource consuming and classification of their products could be left to the industry. Others were favourable to the idea of a list at UN level which would, at least compare existing available lists for clarification of the classification of chemicals traded in significant quantities.

137. There was nevertheless some consensus as regards some issues. If the GHS classification of chemicals had to appear in a list, the classification should not be a default classification. Due to divergencies in classification practices and existing classifications on

the European CLP list and the transport list, harmonizing the transport packing group classification of Class 8 with the indications provided in the CLP list would exclude the possibility of classification in packing group III, leading to reclassification of many corrosive substances in packing group I. This would prevent the use of some packagings, IBCs and tanks currently authorized and have important economic implications for the industry.

138. Many experts considered that it was important to consider carefully the reasons for divergent classifications, and that the current assignment to packing groups should be revised only if there were convincing evidence, including human experience data, showing that the current classification has to be modified.

139. Some experts felt that the assignment of transport conditions decided by the Sub-Committee should be disassociated from the GHS classification criteria for categories 1A, 1B and 1C corrosivity. Others did not share this view, since the criteria for assignment to packing groups I, II and III were the same as those for assignment to categories 1A, 1B and 1C of the GHS. If there were evidence that the current transport classification was inappropriate for a significant number of substances at the moment, it would be possible to adapt the existing rationalised approach for authorizing the continued use of different types of packagings, but so far there was no evidence that the current rationalised approach had to be changed.

140. It was also mentioned that the first step in classification should be checking human experience, which should take precedence, and then using criteria based on tests data. For mixtures, there was support for using the bridging principles which ensure an adequate safety margin.

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.12 as amended).

II. Other issues of interest to the GHS Sub-Committee:

A. Classification of plastics emitting flammable vapours (UN Nos. 2211 and 3314 (POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour and PLASTICS MOULDING COMPOUNDS, in dough, sheet or extruded rope form evolving flammable vapour))

Document: ST/SG/AC.10/C.3/2011/30 (ICCA)

Informal document: INF.32 (ICCA)

16. The Sub-Committee noted that there were currently expandable polymeric beads and moulding plastics on the market which met the description of UN Nos. 2211 and 3314, but which evolved only negligible quantities of flammable vapour. Some experts, while therefore supporting the proposal to exempt certain types of those substances, said that they would prefer a more conservative approach, noting that accidents had occurred with those substances. It would thus be necessary to make provision for a hazard assessment method on the basis of tests which could be included in the Manual of Tests and Criteria, taking into consideration the high temperatures that could be encountered in certain regions of the world. The representative of ICCA said that he would submit a new proposal at the next session.

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.1).

B. Provisions for uranium hexafluoride

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

Informal documents: INF.18 (Secretariat)

INF.25 (IAEA)

INF.36 (Austria) (reproduced in annex 2 to this document)

59. Several experts, referring to the interpretation of IAEA data in document – 2001/46 provided by the expert from Austria in informal document INF.36, said that the subsidiary risk of Division 6.1, packing group I, should also be taken into consideration.

60. As no official proposal had been made for the addition of the subsidiary risk or for the replacement of risk 8 with risk 6.1, it was decided not to discuss the question at the current session, on the understanding that it could be raised at later sessions on the basis of official documents. **The experts of the GHS Sub-Committee should also be consulted on the subject, as they were experts on chemical health risks.**

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.6, as amended).

C. Revised proposals for the descriptions of labels, placards, symbols, markings and marks

Document: ST/SG/AC.10/C.3/2011/32 (United Kingdom)

Informal document: INF.16 (United Kingdom)

47. Several experts expressed reservations about the proposal to reduce the minimum dimensions of marks for limited quantities and for dangers to the aquatic environment from 100 mm x 100 mm to 90 mm x 90 mm. The reasoning that it was necessary, for practical reasons in printing the labels, to provide a margin of 5 mm on the outside edge was unconvincing, as the question related not to labels but to marks, and the same issue would arise if the minimum dimensions were reduced.

48. **The expert from the United Kingdom said that he would prepare a new proposal.** A text should be prepared for the Guiding Principles explaining the standardised approach taken for the descriptions of labels, placards, symbols, markings and marks including the specified dimensions.

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.5, as amended).

D. Issues related to fireworks

Informal document: INF.39 (United States of America) (reproduced in Annex 3 to this document)

121. The Sub-Committee welcomed the initiative of the expert from the United States of America to discuss implementation of the current fireworks default classification system on a regional and a national level. It invited interested delegations to register for the proposed videoconference and provide the information requested after registration in order to enable to expert from the United States of America to carry out a survey that will serve as a basis for discussion at the videoconference. It was agreed to bring this videoconference to the attention of the GHS Sub-Committee and to invite their participation.

(Ref.Doc: Draft report of the Sub-Committee of Experts on the TDG on its 40th session: ST/SG/AC.10/C.3/2011/CRP.3/Add.11, as amended).

Annex 1

Proposed draft amendments to the 4th revised edition of the GHS

In section 2.1.3 re-number the NOTE after Table 2.1.2 to NOTE 1.

In section 2.1.3 add a new Note under Table 2.1.2 with the following text:

"NOTE 2: Substances and mixtures with a positive result in test series 2 in the *UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria*, Part I, section 12, which are exempted from classification as explosives (based on their packaging or other properties and the results in test series 6 in the *UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria*, Part I, section 16) still have explosive properties. The user may not be aware of these potential explosive properties once the conditions for exemption from classification as explosive are no longer met. To communicate the potential hazards in accordance with Table 1.5.2, the explosive properties of the substance or mixture should be communicated in Section 2 (Hazard Identification) and Section 9 (Physical and Chemical Properties) of the Safety Data Sheet, and other sections of the Safety Data Sheet, as appropriate."

(Reference document: informal document TDG/40/INF.17 – GHS/22/INF.14, as amended)

Annex 2

Provisions for uranium hexafluoride

(Information document submitted by the expert from Austria to the 40th session of the Sub-Committee of Experts on the Transport of Dangerous Goods)

**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**

25 November 2011

Fortieth session

Geneva, 28 November – 7 December 2011

Item 6 of the provisional agenda

Cooperation with the International Atomic Energy Agency

**Provisions for uranium hexafluoride with less than 0.1 kg per
package**

Transmitted by the expert from Austria

Uranium hexafluoride is a very special substance with many hazardous properties.

For the property fissile only the experts of TRANSSC have the necessary expertise.

The radiation risk depends on the isotopes. For enriched Uranium hexafluoride there is a rather low but significant radio toxicity and for depleted Uranium hexafluoride this risk is almost negligible.

The document presented by the IAEA and the literature provided in this document (sources are IUCLID (European Commission), RTECS (US-Government) and the IAEA) show that this substance has a very high toxicity.

The IAEA TECDOC 608 demonstrates that the chemical toxicity is much higher than the radio toxicity. For better understanding I added some more data to that table (Table 1).

A special problem is the fact that this is a substance with a sublimation point of 56° C. So the vapour pressure of this substance is the same as from a liquid with a boiling point of 56° C. The Orange Book defines toxic by inhalation only for liquids but sublimation of solid substances has the same effect for the vapour pressure and greater 56° C means 100% evaporated. So we can use Figure 2.6.1 from our regulation with the values from document 46 (Figure 1).

Nevertheless it is a significant change to a rather important substance to add new subsidiary risks. The experts on toxicity should deal with this problem and for the vapour pressure it should make no difference if the substance is liquid or solid because if there are only few solid substances with a high vapour pressure it does not harm. (Dusts are a completely different and much more complicated problem!)

The proposal of the IAEA for less than 100 g UF₆ contains reasonable packing provisions, no complete exemptions and a marking directly related to UF₆. The question of the class is less relevant. I prefer class 6.1 but that can be done only after the existing entries UN 2977 and UN 2978 are corrected. The existing regulation means that UN 2978 has to be used. The new UN number will therefore not change too much, it will remain in class 7 and the subsidiary risk has to be taken into account.

Table 1

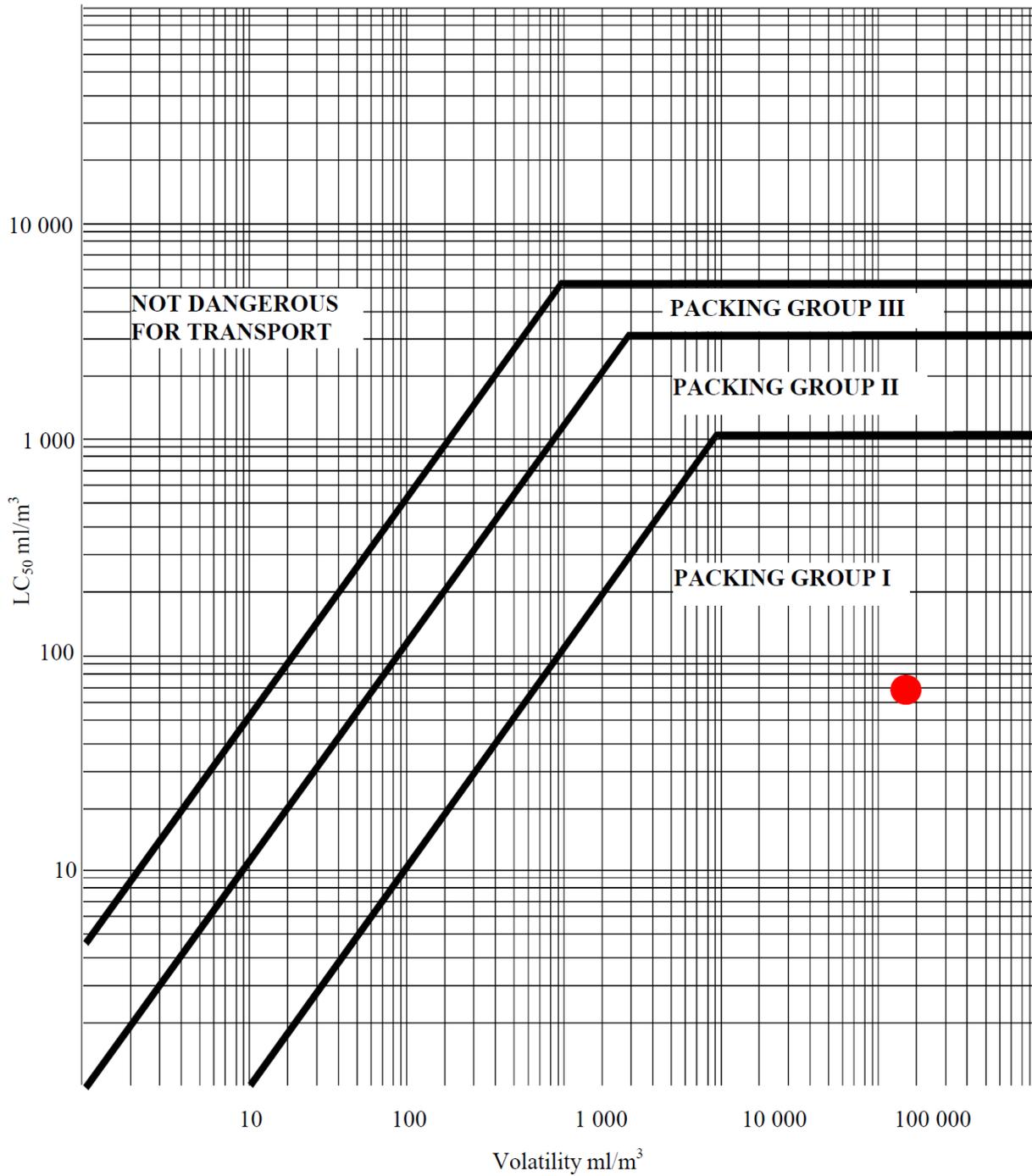
IAEA-TECDOC 608: Interim guidance on the safe transport of uranium hexafluoride, page 46

(Added information for more clarity, values unchanged)

Absorbed quantity of soluble Uranium (mg/kg body weight)	Absolut amount for a 70 kg person in mg	Equivalent activity		Equivalent radiation dose/Effective dose (mSv)	Acute chemical toxicity effect	Acute radio toxicity effect
		(μ Ci)	(Bq)			
For highly enriched Uranium (97,5 % U-235, 1,14 % U-234, worst case for radio toxicity)						
0,03	2,10	0,160	5.920	0,280	No	No
0,06	4,06	0,300	11.100	0,540	Renal injury	No
1,63	114,10	8,300	307.100	15,000	50% lethality	No
19,29	1.350,30	100,000	3.700.000	178,000	Lethal	Onset of radiological effects
433,00	30.310,00	2208,00 0	81.696.00 0	4.000,000	Lethal	50% lethality
For depleted Uranium (0,45 % U-235, Table All.1, added values)						
0,03	2,10	0,001	37	0,001	No	No
0,06	4,06	0,001	37	0,002	Renal injury	No
1,63	114,10	0,039	1.443	0,065	50% lethality	No
4.500,00	315.000	107,000	3.959.000	179,000	Lethal	Onset of radiological effects
100.000,00	7.000.000	2.389,00	88.393.00	3.983,000	Lethal	50% lethality

Figure 1

Figure 2.6.1: INHALATION TOXICITY: PACKING GROUP BORDERLINES



Annex 3

Issues related to fireworks

(Information document submitted by the expert from Austria to the 40th session of the Sub-Committee of Experts on the Transport of Dangerous Goods)

**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

28 November 2011

Fortieth session

Geneva, 28 November – 7 December 2011

Item 10 of the provisional agenda

Other Business

**Invitation to Participate in an International Videoconference
regarding Fireworks Classification, Approval and Transport**

Transmitted by the expert from the United States

Introduction

1. During the Sub-Committee's previous session, the United States organized and participated in informal discussions with members of the explosives working group and pyrotechnic experts to discuss implementation of the current fireworks default classification system on a regional and national level. Approximately ten representatives from Competent Authorities participated in this discussion where topics included, but were not limited to, fireworks classification schemes within their respective states, approval and testing of fireworks, the UN default fireworks classification table and the safe transport of fireworks.
2. The expert from the United States is interested in continuing this dialogue and expanding upon the topics previously discussed. Furthermore, the United States is looking to expand the scope of authorities involved in these conversations. To facilitate discussion, the United States plans to host an international videoconference in early 2012 to address the topic of fireworks classification, approval and transport. The expert from the United States would like to extend an invitation to the appropriate experts within each Competent Authority to participate in this videoconference. It is envisioned that such dialogue will provide a valuable opportunity to foster greater understanding between Competent Authorities from around the world regarding the classification of fireworks, specifically, how classification of fireworks is handled within each country and the application of the UN default fireworks classification table.
3. The United States requests that interested delegates register to participate and also make State pyrotechnic experts aware of this videoconference. Experts interested in participating in this videoconference may register by contacting Vallary Maxey via email at: vallary.maxey@dot.gov. Further details on the timing and logistics of the international videoconference will subsequently be provided. The United States will also provide

interested parties with a preliminary survey from which the videoconference agenda will be derived. So that delegates have an understanding of the types of questions that will be considered, the attached is a listing of examples of questions likely to be considered in the survey to be provided to all registrants.

Sample Questions

Do you evaluate fireworks for transportation classification, consumer safety, or both?

Do you use the UN Default Table for the classification of fireworks?

If you do use the UN Default Table, do you require that fireworks are tested?

If you do require testing, is the testing related to the classification (design type) or consumer safety (production sampling)? If so, please explain.

What exceptions or variances have you adopted, if any, from the UN Regulations?

What is the flow process for the device — from the manufacturer → to testing or the UN Table → to Competent Authority approval?

What is the average number of fireworks approvals you issue yearly?

How do you regulate (enforce) the transportation of fireworks, e.g., do you inspect shipments of fireworks and do you enforce your regulations? If so, how do you inspect and enforce?

When unapproved fireworks are found do you have seizure and destruction authority?

Do you have a prohibited chemicals list?

Do you have reciprocity between countries?

How do you regulate waste firework shipments to a disposal facility (i.e., firework debris and remains from firework displays such as unexploded stars)?
