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 **1 December 2017**

Fifty-second session
Geneva, 26 November – 6 December 2017
Item 2 and 10(d) of the provisional agenda
Explosives and related matters, Use of the Manual of Tests and Criteria in the context of the GHS

Report of the Working Group on Explosives

Transmitted by the chairman of the Working Group on Explosives

Introduction

1. The working group met from 26 – 30 November 2017 in a parallel session to the plenary meeting of the Sub-Committee of Experts on the Transport of Dangerous Goods. This meeting of the working group was well attended with 37 experts in attendance from Belgium, Canada, Finland, France, Germany, Japan, Netherlands, Norway, Poland, Spain, Sweden, United Kingdom, United States of America, Association of European Manufacturers of Sporting Ammunition (AFEMS), Australian Explosives Industry and Safety Group (AEISG), Council on Safe Transportation of Hazardous Articles (COSTHA), European Chemical Industry Council (CEFIC), Institute of Makers of Explosives (IME), Sporting Arms and Ammunition Manufacturers' Institute (SAAMI), and the GHS Secretariat. Annex 1 of this report provides a list of participants. The group was tasked to discuss technical matters related to official papers and to discuss informal papers as time allowed. Mr. Ed de Jong (Netherlands) served as chair of the working group and Mr. David Boston (IME) as secretary.

2. The working group met for two and one-half days to consider the papers assigned to it by the TDG Sub-Committee and informally on a final day and one-half while this report was being prepared and reviewed and to discuss other matters of interest. Those informal discussions are not reported herein.

3. The working group was tasked by the Sub-Committee to review the following documents:

Document	Title
Agenda Item 2(a)	Review of tests series 6
ST/SG/AC.10/C.3/2017/50 - (SAAMI)	*Disruption criterion of test Series 6(d)*
Agenda Item 2(e)	Stability tests for industrial nitrocellulose
ST/SG/AC.10/C.3/2017/35 (Germany)	*Stability tests for industrial nitrocellulose*
UN/SCETDG/52/INF.6 (CEFIC, WONIPA)	*Stability tests for nitrocellulose*
UN/SCETDG/52/INF.7 (CEFIC, WONIPA)	*Classification of desensitized explosives for the purposes of supply and use according to UN GHS chapter 2.17: Test results on industrial nitrocellulose*
UN/SCETDG/52/INF.14 (SAAMI)	*Classification of desensitized explosives for the purposes of supply and use according to GHS chapter 2.17*
Agenda Item 2(f)	Application of security provisions to explosives N.O.S.
ST/SG/AC.10/C.3/2017/47 (UK)	*Application of security provisions to explosives*

Document	Title
Agenda Item 2(g)	Review of packing instructions for explosives
ST/SG/AC.10/C.3/2017/48 (UK)	*Additional LP101 entries into the Dangerous Goods List*
UN/SCETDG/52/INF.40 (Canada)	*Comments on ST/SG/AC.10/C.3/2017/48; Additional LP101 entries into the Dangerous Goods List*
Agenda Item 2(i)	Review of Chapter 2.1 of the GHS
UN/SCETDG/52/INF.10 (Germany)	*Exclusion from Class 1 fire test according to the note in 2.1.3.6.4*
UN/SCETDG/52/INF.20 (Sweden)	*Status report on the work of the informal correspondence group on the revision of GHS chapter 2.1*
Agenda Item 2(j)	Miscellaneous
ST/SG/AC.10/C.3/2017/51 (SAAMI)	*A method for transporting controlled shipments of explosives samples (≤ 25 grams)*
UN/SCETDG/52/INF.12 (CEFIC)	*Transport of energetic samples for further testing*
UN/SCETDG/52/INF.15 (IME)	*Comments on UN 0222 Ammonium nitrate*
UN/SCETDG/52/INF.21 (Finland)	*Proposal to create a new UN number for MINES with bursting charge 1.6D*
UN/SCETDG/52/INF.32 (COSTHA)	*What constitutes a SAFETY DEVICE, UN3268?*
UN/SCETDG/52/INF.33 (USA)	*Extension of the default fireworks classification table for classification of Articles, pyrotechnic UN 0431*
Agenda Item 10(d)	Use of the Manual of Tests and Criteria in the context of the GHS
UN/SCETDG/52/INF.3 - UN/SCEGHS/34/INF.3 (EWG Chair)	*Revision of the Manual of Tests and Criteria Section 1*
UN/SCETDG/52/INF.3/Add.1- UN/SCEGHS/34/INF.3/Add.1 (EWG Chair)	*Revision of the Manual of Tests and Criteria: Part I: Section 10*
UN/SCETDG/52/INF.3/Add.2- UN/SCEGHS/34/INF.3/Add.2 (EWG Chair)	*Revision of the Manual of Tests and Criteria: Part II: Sections 20 - 28*
UN/SCETDG/52/INF.13 (AEISG)	*Comments on INF.3/Add.1, figures 10.1 and 10.4*
UN/SCETDG/52/INF.28 (SAAMI)	*Use of the Manual of Tests and Criteria in the context of GHS: Section 1 and 10*

Agenda Item 2(a) – Review of test series 6

4. **Subject:** Disruption of test material in TS 6(d)

Documents: *None*

Informal documents: *ST/SG/AC.10/C.3/2017/50 - (SAAMI)*

Discussion: There was no support for the SAAMI proposal as written; however, there was general agreement that the disruption criterion for the 6(d) test was too subjective and general support for a review of that criterion, as well as the other 6(d) acceptance criteria, to remove or minimize subjectivity in the 6(d) test acceptance criteria. It was suggested that a definition of "hazardous effects" might be beneficial in such a review.

Conclusion: Taking account of comments from the working group, SAAMI will likely return next session with a revised proposal.

Agenda Item 2(e) – Stability tests for industrial nitrocellulose

5. **Subject:** Stability tests for industrial nitrocellulose

Documents: *ST/SG/AC.10/C.3/2017/35 (Germany)*

Informal documents: *UN/SCETDG/52/INF.6 (CEFIC, WONIPA)*

Discussion: The working group agreed last session that the 3(c) test was unsuitable for evaluating the stability of nitrocellulose and its mixtures and that the Bergmann-Junk and the Methyl Violet Paper tests were suitable replacements. CEFIC had agreed to lead an intersessional informal group to develop proposals for the description of the test procedures and how to incorporate these into the Manual of Tests and Criteria ("test manual"). In addition, this group was to examine whether transitional provisions for existing NC stability tests are appropriate and/or needed.

The working group generally agreed with the proposed test descriptions in INF.6, although it was noted that the test procedures may not be formatted in a manner typically found in the test manual (e.g., text about safety equipment), and the Methyl Violet Paper test procedure was not clearly expressed. In addition, some concern was expressed about implementation for Class 1 nitrocellulose vs. Division 4.1 nitrocellulose. It was suggested that two special provisions be developed to address this, one for the Class 1 entries and the other for the 4.1 entries. USA drafted text for the two proposed special provisions. After review, and some amendment by the working group, it was agreed that the text for the two special provisions could read as follows:

> *SP for the Class 1 entries:*
> *"The Nitrocellulose is exempted from the UN Test Series 3(c) thermal stability test requirements, but the consignor must ensure that the material meets the criteria of the Bergmann-Junk test or Methyl Violet Paper test in the Manual of Tests and Criteria Appendix XXX".*
>
> *SP for the Division 4.1 entries:*
> *"The consignor must ensure that the material meets the criteria of the Bergmann-Junk test or Methyl Violet Paper test in the Manual of Tests and Criteria Appendix XXX".*

The group discussed the question raised by China in the plenary on UN 2059 and concluded that, for this entry, the special provision was not needed considering that the starting material to make these solutions would already be subject to the special provisions and that the tests cannot be performed on the solutions themselves.

Regarding the possible need for transitional provisions, the current 75°C thermal stability test is not predictive enough for longer term stability; therefore, no transitional provision is required.

Conclusion: CEFIC and/or Germany will draft a formal proposal for the next session. They asked interested parties to correspond with them by 1 February so that the working paper could be completed by the working paper submission deadline.

6. **Subject:** Classification of desensitized explosives for the purposes of supply and use according to UN GHS chapter 2.17

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.7 (CEFIC, WONIPA)*
UN/SCETDG/52/INF.14 (SAAMI)

Discussion: It was generally agreed that classification based on existing test data, where appropriate, is desirable in lieu of actually performing tests. There was some discussion regarding the need to be more specific in describing the steel drum packaging to which the data applies.

Sweden observed some discrepancies between the results presented in INF.7 and the results published in 51.4.5.1 of the Manual of Tests and Criteria. WONIPA will check it.

Conclusion: CEFIC and SAAMI will prepare updated proposals for the next session.

Agenda Item 2(f) – Application of security provisions to explosives N.O.S.

7. **Subject:** Application of security provisions to explosives

Documents: *ST/SG/AC.10/C.3/2017/47 (UK)*

Informal documents: *None*

Discussion: The working group confirmed that nothing in 2017/47 has changed from what was agreed to at the last session.

Conclusion: The working group unanimously supported the proposal from the UK and recommends approval by the Sub-Committee. See Revision 1 in Annex 2.

Agenda Item 2(g) – Review of packing instructions for explosives

8. **Subject:** Additional LP101 entries into the Dangerous Goods List

Documents: *ST/SG/AC.10/C.3/2017/48 (UK)*

Informal documents: *UN/SCETDG/52/INF.40 (Canada)*

Discussion: Citing what it believes to be an unintentional omission, in 2017/48, the UK proposes to add the LP101 reference to each of the 35 additional entries assigned to packing instruction P130 and listed below (cartridges for weapons, small arms cartridges, bombs, mines, projectiles, rockets, propelling charges, torpedoes, rocket warheads, plastic bonded bursting charges):

0005, 0007, 0012, 0014, 0033, 0037, 0136, 0167, 0180, 0238, 0240, 0242, 0279, 0291, 0294, 0295, 0324, 0326, 0327, 0330, 0338, 0339, 0348, 0369, 0371, 0413, 0414, 0417, 0426, 0427, 0453, 0457, 0458, 0459, 0460

In INF.40, Canada agreed that the additional entries were appropriate, but that LP101 is not sufficient for those P130 items not assigned LP101 and in INF.40 proposes P130 not LP101 to be assigned to LP102.

The USA supported the UK proposal as-is and noted that such annotations were already in effect in its Hazardous Materials Regulations. The USA also noted that situations described by Canada couldn't be treated generically as proposed in INF.40, but should be addressed with specific packing instructions in the competent authority approval.

There was some support for both proposals, but no consensus.

Conclusion: The UK will consider comments from the working group and may submit a new proposal at a future session.

Agenda Item 2(i) – Review of Chapter 2.1 of the GHS

9. **Subject:** Exclusion from Class 1 fire test according to the note in 2.1.3.6.4

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.10 (Germany)*

Discussion: The working group reviewed a comparison of the fire test descriptions in the two standards and confirmed that ISO 14451-2 is comparable to and an improvement on ISO 12097-3. The heating rate was discussed, and it was unanimously agreed that the heating rate referred to in INF.10 applies only to the new standard reference (i.e., ISO 14451-2) and not to other test methods that might require a different heating rate.

Conclusion: The EWG supported the change proposed by Germany and requests that standards ISO 12097-3 and ISO 14451-2 are made available to the working group. Germany will prepare a formal proposal for the next session.

10. **Subject:** Status report on the work of the informal correspondence group on the revision of GHS chapter 2.1

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.20 (Sweden)*

Discussion: The working group began discussion of INF.20 on the afternoon of the last full day of formal discussions. Two different schemes for classification of explosives within the GHS were reviewed but no conclusion reached. The discussion continued during the informal session on Thursday and any conclusions will be reported verbally to the Sub-Committee.

Conclusion: See "Discussion" above.

Agenda Item 2(j) – Miscellaneous

11. **Subject:** A method for transporting controlled shipments of small quantities of explosives

Documents: *ST/SG/AC.10/C.3/2017/51 (SAAMI)*

Informal documents: *None*

Discussion: The working group agreed that the shipping methods proposed by SAAMI would, for the time being, apply only for transport of small quantities of substances and that articles may be considered at a later date. There was general agreement of the working group that these proposed shipping methods would be of value to those that are involved in international round robin testing and their adoption into the Model Regulations was desirable. It was also noted that the shipping methods described in 2017/51 provide a safe way to transport as yet unclassified explosives for testing and product development. Further, the group:

- Identified a couple of implementation options: a) create new UN number entries as proposed by SAAMI or b) add a special provision to UN0190 allowing use without

Competent Authority (CA) approval of the substances shipped (see next bullet point for more on this).

- Agreed that CA approval should be required for the pipe as an article, but not for each of the specific substances contained therein. This would minimize the need for CAs to be involved but would help to document authorized users.

- Noted that, to avoid confusion with UN0190, the term "sample" should be avoided and that either "not fully classified" or "not yet classified" be used in its place (e.g., "explosive, not fully classified").

- Considered whether the classification should be 1.4E, as in the USA Special Permits cited in 2017/51, or should be 1.4S since there are no hazardous effects outside of the package.

Conclusion: Taking account of the comments from the working group, SAAMI will prepare a revised proposal for the next session.

12. **Subject:** Transport of energetic samples for further testing

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.12 (CEFIC)*

Discussion: Some of the working group had difficulty understanding the proposal from CEFIC building on the adopted provisions of energetic samples for testing. Germany suggested that CEFIC prepare an overview of how self-reactives are classified and hopes that would aid in understanding the CEFIC proposal. The USA also wanted to know how the proposal addresses sections 3.3(c) and 5.1(b) of Appendix 6 of the test manual so that further review could be conducted by experts in the USA.

Conclusion: CEFIC will prepare the suggested overview and an explanation of how the proposal addresses sections 3.3(c) and 5.1(b) of Appendix 6 of the test manual for review by the working group intersessionally.

13. **Subject:** UN 0222 Ammonium nitrate

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.15 (IME)*

Discussion: In INF.15, IME sought to understand if and how UN 0222 might be used, as it is not used in the USA for commercial purposes. If the entry were deemed obsolete or unnecessary, then IME would prepare a proposal to remove UN 0222 from the Dangerous Goods List (DGL).

The working group preferred not to remove UN 0222 with some (including UK, Germany, USA, Poland, Sweden, AEISG) explaining that the entry is useful for classifying contaminated ammonium nitrate and AN of unknown classification. The working group confirmed that UN 0222 AN is not manufactured commercially for distribution, but as cited by some delegations, preferred to retain the entry for special purposes and for fertilizers that fail test series 2.

Conclusion: IME will not proceed with a proposal to remove UN 0222 from the DGL.

14. **Subject:** New UN number of 1.6D Mines with bursting charge

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.21 (Finland)*

Discussion: To accommodate the Finnish delegation, this document was scheduled for discussion during the informal session on Thursday and will be reported verbally to the Sub-Committee.

Conclusion: See "Discussion" above.

15. **Subject:** Safety Device, UN 3268

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.32 (COSTHA)*

Discussion: It was noted that some countries have issued class 9 classifications to micro gas generators; however, other countries have declined to do so. This creates regulatory disharmony that is contrary to the intent of the Model Regulations. The working group also noted that there was no technical reason that such classifications should not be allowed, but that it was a policy decision whether or not these articles are safety devices that should be considered by the TDG Sub-Committee. The group noted parallels with discussion in plenary on document 2017/29 on life saving devices.

Conclusion: Taking account of the comments from the working group, COSTHA advised that it may return with a document for a future session. The working group requests further guidance from the Sub-Committee.

16. **Subject:** Extension of the default fireworks classification table for classification of Articles, pyrotechnic UN 0431

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.33 (USA)*

Discussion: The working group was sympathetic to the proposal from the USA, but cautioned that it might be too broad and allow inappropriate classification of certain pyrotechnic articles. It was suggested that the scope should be limited to those pyrotechnic articles that are similar to and meet the criteria of those fireworks in the default table.

Conclusion: The USA will likely return with a revised proposal for the next session.

Agenda Item 10(d) – Use of the Manual of Tests and Criteria in the context of the GHS

17. **Subject:** Addition of GHS context into the MTC

Documents: *None*

Informal documents: *UN/SCETDG/52/INF.3 – UN/SCEGHS/34/INF.3*
UN/SCETDG/52/INF.3/Add.1 – UN/SCEGHS/34/INF.3/Add.1
UN/SCETDG/52/INF.3/Add.2 – UN/SCEGHS/34/INF.3/Add.2
UN/SCETDG/52/INF.13 (AEISG)
UN/SCETDG/52/INF.28 (SAAMI)

Discussion: The working group completed review of Sections 1 and 10 of the Manual of Tests and Criteria (INF.3 and INF.3/Add.1). Proposals in INF.13 were considered by the working group, but there was no support for their adoption. Several proposals in INF.28 from SAAMI were adopted, including amendments from the working group, and the remainder were withdrawn. All accepted revisions to these sections of the manual are provided in Add.1 and Add.2 to this report (see "Conclusion" below).

SAAMI cautioned that, as the manual is generally being made sector-neutral, other physical properties currently not addressed in the manual, such as electrostatic sensitivity, might be considered. In that case, proposals should be made to GHS.

A review of Part II of the manual (INF.3/Add.2) was started and will continue during the next session.

Conclusion: Proposed amendments are shown in the following addenda to this report:

- UN/SCETDG/52/INF.53/Add.1 – Section 1
- UN/SCETDG/52/INF.53/Add.2 – Section 10

Agreed changes will be submitted to the Sub-Committee as formal proposals for adoption during the next session.

The documents are available on the 52nd Session INF Documents webpage:
http://www.unece.org/trans/main/dgdb/dgsubc3/c3inf52.html

Annex 1
Working Group on Explosives (26 – 30 November 2017)
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Annex 2
Working Group on Explosives (26 – 30 November 2017)
Changes for the Model Regulations (20th Revised Edition)

Notes: Source of proposed change is indicated by *italicized text (Source: XXX)*
~~Red~~ indicates deleted text
Blue indicates inserted text

Amendment 1.

Section 1.4.3 – Amend Table 1.4.1 as indicated below:

…

Class 1, Division 1.5 explosives
Class 1, Division 1.6 explosives
Division 2.1 flammable gases in bulk

…

Source: Source document ST/SG/AC.10/C.3/2017/47, Para. 6 and Para. 7 of this report.