

**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals**

21 November 2014

**Sub-Committee of Experts on the
Transport of Dangerous Goods**

Forty-sixth session

Geneva, 1–9 December 2014

Item 8 (i) of the provisional agenda

**Issues relating to the Globally Harmonized System
of Classification and Labelling of Chemicals:
miscellaneous**

**Sub-Committee of Experts on the Globally Harmonized
System of Classification and Labelling of Chemicals**

Twenty-eighth session

Geneva, 10–12 (a.m.) December 2014

Item 2 (b) (i) of the provisional agenda

**Classification criteria and related hazard
communication: work of the Sub-Committee of Experts
on the Transport of Dangerous Goods: physical
hazards**

**Classification of flammable gases – establishment of a joint
TDG-GHS informal working group**

Transmitted by the experts from Belgium and Japan

Introduction

1. Following the proposals by Belgium and Japan (informal documents INF.26 (TDG, 42nd session), INF.13 (GHS, 24th session), INF.50 (TDG, 45th session), INF.14 (GHS, 27th session) and the inclusion of a review of the criteria for categorisation of flammable gases in the current and next work programmes (ST/SG/AC.10/C.3/90, ST/SG/AC.10/C.4/54), the expert from Belgium considers that the most appropriate way forward would be the establishment of a joint TDG-GHS informal working group to study the following issue.
2. Under the current classification criteria in GHS and the Model Regulations, a gas is flammable when it has a flammable range with air at 20°C and a standard atmospheric pressure of 101.3 kPa. Additional criteria then subdivide these gases into flammable or extremely flammable.
3. In practice, with the current criteria almost all flammable gases (except ammonia and methyl bromide which are treated separately) are classified as “extremely flammable”, making no distinction between for instance hydrogen and refrigerant gases in hazard identification and communication. Industrial standards have acknowledged differences in flammability. For example, National Fire Protection Association (NFPA) standard 68 in the United States of America differentiates gases against their flammability for the purpose of determining the appropriate size of safety vents. This standard uses burning velocity to differentiate the hazard. Another example, ISO 817:2014 and ASHRAE 34, two industrial standards that concern refrigerant gases, also differentiate gases according to flammability for purposes of installation safety and include an active low flammability category. Furthermore, the distinction in flammability is also recognised in the academic literature (i.e. “*Flammable refrigerant classification in accordance with combustion parameters and consequences in terms of risk and usage*” T Jabbour, D Clodic, Centre d’Énergétique, Ecole des Mines de Paris, Dec 2003; “*Flammability properties of 2L refrigerants*” Kenji TAKIZAWA, Kazuaki TOKUHASHI and Shigeo KONDO, Research Institute for

Innovation in sustainable Chemistry, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, 305-8565, Japan 2012).

4. Notably for refrigerants the search for non-ozone depleting and low global warming potential (GWP) gasses, as mandated by the Montreal and Kyoto protocols respectively, has required a need for less persistent substances. Less persistence results in a need for a degree of flammability. The “extremely flammable” classification of these low GWP gases, presents a significant impediment to their adoption especially by developing countries and in construction codes, without offering possibilities to differentiate these gases from other “more flammable” gases.

5. In accordance with the principles of the GHS to provide additional classification building blocks as needs arise, this issue of flammability categorisation should be considered by a joint TDG-GHS informal working group, as the TDG Sub-Committee serves as the focal point for physical hazards.

Proposal

6. The TDG and GHS sub-committees are invited to review the proposal to create a joint TDG-GHS informal working group to consider this issue. The proposed mandate for this working group is as follows:

- (a) Analysis of the necessity to create GHS subdivisions for flammable gases including evaluation of the most appropriate additional parameters for modified classification criteria (based on a review of past studies)
 - (b) Technical analysis of the candidate parameters linked to these criteria and their importance related to risks in workplace, for the users, for emergency services and for the transport of dangerous goods
 - (c) Evaluation of the available test methods and their accuracy to define the candidate parameters
 - (d) A review of regulatory and industrial standards in related fields
 - (e) Impact analysis on the existing classifications of flammable gases (with feedback from other gases – sectors)
 - (f) Developing details of possible modifications for GHS/TDG Manual of Tests and Criteria
 - (g) Reporting to both sub-committees (TDG and GHS) on progress at the next sessions
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