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| **Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals 2 December 2024** | |
| **Sub-Committee of Experts on the  Transport of Dangerous Goods** | **Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals** |
| **Sixty-fifth session** | **Forty-seventh session** |
| Geneva, 25 November - 3 December 2024 Item 10 (c) of the provisional agenda  **Issues relating to the Globally Harmonized System of Classification and Labelling of Chemicals: Miscellaneous** | Geneva, 4-6 December 2024 Item 2 (k) of the provisional agenda  **Work on the Globally Harmonized System of Classification and Labelling of Chemicals:**  **Other matters** |

Proposal to cover substances and mixtures that emit flammable vapours and gases in annex 11 of the GHS

Transmitted by the expert from the United States of America

Purpose

1. This paper provides an update on the work to develop a new section within annex 11 of the GHS that will contain guidance on the identification and communication of the flammable hazard presented by substances and mixtures that emit flammable vapor or gas, but which themselves are not classified for flammability properties. This issue was first raised by China in INF.34 (TDG, 62nd session) –INF.16 (GHS, 44th session). At the forty-sixth session, the expert from the United States of America presented INF.39 (TDG, 63rd session)– INF.17(GHS, 45th session) which proposed combining the proposal from China with a work item the practical classification issues informal working group (PCI-IWG) program of work. That item addressed the hazards posed by some substances and mixtures that create a flammable vapour in the headspace of solid and liquid substances and mixtures in storage. As noted in the report of the forty-fifth session (ST/SG/AC.10/C.4/90), the GHS Sub-committee noted that both the workstream, should be merged and addressed jointly by interested parties.

Status report

2. China and the United States of America worked together to host a kick-off meeting of interested parties on 4 March 2024 where we presented a step wise approach to developing a proposal.

1. At the kick-off meeting, participants agreed to the scope and context of the new annex 11 endorsed by the GHS Sub-Committee at the forty-fifth session and to use the draft outline presented in INF.17. (GHS, 45th session). Participants also agreed to send examples of known substances and mixtures that emit a flammable vapour or gas, but which are not already classified based on flammability properties.
2. The United States of America agreed to analyse the examples looking for ways to group similar conditions/mechanisms that lead to the emission of flammable vapours or gases. The goal, where applicable, is to provide a generic description of the conditions that can lead to the emission of flammable vapor or gas. Then to supplement that general description with examples to highlight how users can identify specific substances and mixtures.
3. The United States of America will develop a preliminary draft of the new guidance for annex 11.
4. The United States of America and China will work with interested parties to incorporate feedback from the Sub-committee to develop an official document.

3. The annex to this document provides a preliminary draft of the guidance.

**Nest steps and action requested**

4. The United States of America and China will schedule a meeting of the interested parties to review the analysis of the examples that were used to develop the draft proposal and continue the work to jointly develop a final proposal.

5. The sub-committees are invited to note the progress of the work in paragraphs 2 and 3.

6. In addition, the sub-committees are also invited to provide feedback on the draft proposal which will be considered by the interested parties as work continues into the next biennium to develop an official document.

**Annex**

“**A11.4 Substances and mixtures that emit flammable vapour or gas**

This section provides guidance on identifying substances and mixture that emit flammable vapor or gas but which themselves are not classified for flammability properties and the factors that contribute to the emission of a flammable vapor or gas.

**A11.4.1 *Scope and applicability***

Some substances or mixtures, which are not already classified for flammability properties into existing physical hazard classes, taking into consideration the building block approach, may emit flammable vapour or gas during handling, processing[[1]](#footnote-2), storage, transfer or movement. Where a flammable hazard is identified for these substances or mixtures, information should be communicated to users so effective preventive and protective measure can be implemented.

**A11.4.2 *Identification of flammable vapours hazard***

Evaluation requires expert judgement to evaluate evidence such as human experience, information from similar substances and other pertinent data. For substances and mixtures not classified themselves, but which may form flammable/explosive vapour-air mixtures, examples are provided below that can be used as guidance for identifying flammability properties:

(a) For halogenated hydrocarbon substances and mixtures containing greater than 5% halogenated hydrocarbons may form a flammable/explosive vapour-air mixture.

(b) Flammable vapour component may concentrate in the headspace of drums causing a flammable vapour-air mixture. The following conditions may apply:

(i) Some water-based solvents (or other volatile component) may contain flammable components that may concentrate in the headspace of drums/tanks or enclosed spaces. Additionally, it may be possible for a flammable concentration of vapors to accumulate from a large spill or evaporation of the water (or volatile component) of the mixture

(ii) Radiolysis of water or organic materials

(iii) Chemical reactions such as oxidation of organic material or reaction of metals with water and acids

(iv) Decomposition of waste by anaerobic bacteria

(v) Exposure of volatile liquids to sun or heat

Solids or highly viscous liquids may trap flammable components and during handling/processing these flammable components may be released causing a flammable vapour-air mixture.

**A11.4.3 *Supplemental information for hazard communication***

A11.4.3.1 As explained in 1.4.6.3, there are many communication elements which have not been standardized in the harmonized system. Some of these clearly need to be communicated to the downstream user. For substances and mixtures not already classified for flammable properties that emit a flammable vapour, sections 2, 5, 7, and 10 of the Safety Data Sheet, at a minimum, should provide information on the flammable hazard. Annex 4 provides further guidance on each section of the SDS. For example, section 2 (A.4.3.2.3) addresses hazards that do not result in classification; section 5 (A4.3.5) covers requirements for fighting a fire; section 7 (A4.3.7) provides guidance on safe handling and storage practices; section 10 (A4.3.10) provides information on stability and reactivity.

A11.4.3.2 To communicate the flammable vapour hazard for substances and mixtures not already classified for flammable properties, competent authorities may require the use of the following phrases[[2]](#footnote-3) on labels, SDSs and/or operating instructions or may leave the choice to the manufacturer or supplier.

(a) “May form a flammable vapours-air mixture during storage.\*”

(b) “May form a flammable vapours-air mixture during transport.”

(c) “May form a flammable vapours-air mixture in use.”

In addition, the phrase “Warning” may be used in conjunction with phrase(s) listed above.

1. This includes conditions which can create the evolution of a flammable vapour. For example, if the substance or mixture is heated or agitated and that causes the substance or mixture to emit flammable vapours or gases, then it is in scope of this section. [↑](#footnote-ref-2)
2. The principles outlined in A3.1.2.5 for combining hazard statements can be used to combine the condition specific hazard statements into a single hazard statement. [↑](#footnote-ref-3)