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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

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

#### Sixty-first session

Geneva, 28 November – 6 December 2022

Item 2 (b) of the provisional agenda

**Explosives and related matters: issues related to the  
definition of explosives**

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

#### Forty-third session

Geneva, 7-9 December 2022

Item 3 (a) of the provisional agenda

**Work on the Globally Harmonized System of  
Classification and Labelling of Chemicals: Work of the  
Sub-Committee of Experts on the Transport of Dangerous  
Goods on matters of interest to the Sub-Committee**

## Amendment of definition “pyrotechnic substance” and introduction of definition “explosive or pyrotechnic effect”

Transmitted by the expert from Sweden\*

### Introduction

1. At the fifty-fifth session of the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG), the Working Group on Explosives (EWG) decided to establish an intersessional correspondence group to review the matter related to the definition of Class 1 and report back to the EWG (see paragraph 10 in informal document INF.55 (TDG, fifty-fifth session)).

2. A status report was submitted to the sixtieth session of the TDG Sub-Committee (see informal document INF.12 (sixtieth session)), which also included three proposals. Experts in the EWG discussed the different proposals and supported proposal 2 and proposal 3 with some amendments (see paragraph 9 together with Annex 2 (Amendment 3) in the report from the EWG, informal document INF.44 to the TDG Sub-Committee (sixtieth session)). However, noting that the texts to be amended appear in Chapter 2.1 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) as well, the Sub-Committee recommended the expert from Sweden to submit the proposal for consideration also by the Sub-Committee of Experts on the GHS (GHS Sub-Committee) at their next session (see paragraph 27 in ST/SG/AC.10/C.3/120).

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\* A/75/6 (Sect.20), para. 20.51

## Proposals supported by the Working Group on Explosives at the sixtieth session of the TDG Sub-Committee

3. Proposal 2 in informal document INF.12 (TDG, sixtieth session) deals with the definition of “pyrotechnic substance” in the Model Regulations 2.1.1.3 (b). This definition refers only to the design of the substance, not to its intrinsic properties. Although in the definition of “explosive substance” in the Model Regulations 2.1.1.3 (a), it is stated “Pyrotechnic substances are included even when they do not evolve gases”, the relationship between explosive substance and pyrotechnic substance is not obvious in the definition itself. This can result in confusion in the application of the definition of pyrotechnic substance.

4. This defect in the definition of pyrotechnic substance can be remedied by re-defining the “pyrotechnic substance” based on the fact that a pyrotechnic substance is a subset of explosive substance and is designed for specific purposes. The proposed new definition, after comments and support from EWG, is “Pyrotechnic substance is an explosive substance that is designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions”.

5. Proposal 3 in informal document INF.12 (TDG, sixtieth session) deals with the phrase “a practical explosive or pyrotechnic effect” in the Model Regulations 2.1.1.1 (c). Since this phrase is not defined or explained, it has caused difficulties and confusion in understanding and applying the definition of Class 1. For example, effects such as heat, light, sound, gas or smoke which are produced by combustion of flammable substances or fuels in the air may be interpreted as “a practical explosive or pyrotechnic effect”.

6. Considering the intrinsic properties of explosive substances and the intention of the Model Regulations 2.1.1.1 (c), “substances manufactured with the view to producing a practical explosive or pyrotechnic effect” in the Model Regulations 2.1.1.1 (c) should only refer to those substances which have the basic explosive properties i.e. the ability to maintain self-sustaining exothermic chemical reactions.

7. Therefore, to facilitate the application of the Model Regulations 2.1.1.1 (c) and to eliminate the possibility of misinterpretation, it is proposed to introduce a definition of “explosive or pyrotechnic effect” to the Model Regulations. The proposed definition, after comments and support from the EWG, is: “explosive or pyrotechnic effect in the context of 2.1.1.1 (c) means an effect produced by self-sustaining exothermic chemical reactions including shock, blast, fragmentation, projection, heat, light, sound, gas and smoke”.

### Consequences to GHS Chapter 2.1

8. Since the definitions for explosives in Chapter 2.1 of the GHS are based on the corresponding definitions of Class 1 in the Model Regulations, changes to the latter will have an impact on the former. Therefore, the corresponding amendments are also proposed to GHS Chapter 2.1.

### Proposal for the Model Regulations

9. In the proposals below, ~~stricken text~~ indicates text to be deleted and underlined text indicates new text to be added.

10. **Proposal 1:** Amend the term “pyrotechnic substance” in the Model Regulations 2.1.1.3 to read as follows:

*“Pyrotechnic substance is ~~a substance or a mixture of substances~~ an explosive substance that is designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions.”.*

11. **Proposal 2:** Add a definition of “explosive or pyrotechnic effect” in the Model Regulations 2.1.1.3 as point (e) to read as follows:

*“(e) Explosive or pyrotechnic effect in the context of 2.1.1.1 (c) means an effect produced by self-sustaining exothermic chemical reactions including shock, blast, fragmentation, projection, heat, light, sound, gas and smoke.”.*

## Consequential proposal for the GHS

12. Should the above amendments proposed to the Model Regulations be accepted by the TDG Sub-Committee, the corresponding consequential amendments to Chapter 2.1 of the GHS are proposed to the GHS Sub-Committee as presented in proposals 3 and 4 below, to harmonize with the Model Regulations. No change in the scope of GHS Chapter 2.1 is foreseen (nor intended) due to these amendments.

13. **Proposal 3:** Amend the term “pyrotechnic substance or mixture” in GHS 2.1.1.1 to read as follows:

*“Pyrotechnic substance or mixture is ~~a substance or mixture of substances~~ an explosive substance or mixture that is designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions.”*

14. **Proposal 4:** Add a definition of “explosive or pyrotechnic effect” in GHS 2.1.1.1 to read as follows:

*“Explosive or pyrotechnic effect in the context of 2.1.1.2.1 c) means an effect produced by self-sustaining exothermic chemical reactions including shock, blast, fragmentation, projection, heat, light, sound, gas and smoke.”*

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