

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

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Position Paper on Dust Explosion Hazard

Transmitted by the expert from Argentina

Introduction

1. The purpose of this paper is to state the position of Argentina regarding the debates taking place in the Sub-Committee of Experts on the Globally Harmonized System (GHS) of Classification and Labelling of Chemicals in the United Nations with reference to the issue of “Dust Explosion Hazard”.
2. This paper refers only to dusts originated from agricultural products.
3. We are aware that there are presently two approaches under consideration in the Sub-Committee regarding the question of “Dust Explosion Hazard.”
 - (a) Introducing a new class of hazard in the GHS; or
 - (b) Setting specific guidance for the communication of hazards by following a harmonized approach. Each of these options is considered below.

GHS New Hazard Class

4. Regarding the first option, **we do not agree on introducing a new hazard class within the GHS** due to the fact that the GHS clearly states that, in order to create a new class, the substance or mixture of substances to be classified must have an intrinsic hazardous property which calls for its classification.
5. Section 1.3.2.2.1 of the GHS reads:

“The GHS uses the term “hazard classification” to indicate that only the intrinsic hazardous properties of substances or mixtures are considered.” (The underlining is ours.)
6. Also, Section 1.1.3.1.1. of the GHS reads:

“The goal of the GHS is to identify the intrinsic hazards found in substances and mixtures and to convey hazard information about these hazards...” (The underlining is ours.)
7. We do not believe that all the dusts or mixtures of dusts with air are intrinsically hazardous substances, nor are they intrinsically explosive. Thus, it becomes necessary to clearly distinguish between those dusts whose explosive property is inherent of the substances originating them – intrinsic property - and those dusts which come from substances or solids which are NOT intrinsically explosive. For the dusts coming from

substances which are not intrinsically explosive - but may be combustible - or the mixtures of these with air, to pose an explosion hazard, there must be a combination of factors such as particle size, a necessary minimum concentration of the particles in the air (Low Flammable Limit), the existence of a minimum energy source of ignition and the condition of confinement, all of which must be simultaneously present to generate an explosion. Therefore, the release of a combustible dust from a condition of confinement (e.g., a building) means that it has escaped confinement and thus does *not* present a dust explosion hazard.

8. An example of this type of dusts is the dust that can proceed from agricultural products. In these types of products, including in the case they were presented in the form of a dust, we consider they do not present an intrinsic hazardous property. So we do not agree that these types of products were included in a possible classification in the GHS.

9. In Annex 1, we provide a flowchart containing the conditions which must be present for a dust explosion hazard to exist. However, in no way do we believe this quality is an intrinsic property of all combustible dusts or mixtures of dusts with air.

10. On the other hand, when speaking about “Dust Explosion Hazard”, it appears that the hazard being referenced is that of physical hazard due to a possible explosion. However, the concept of dust or mixture of dust with air does not necessarily meet the definition that the very GHS presents of explosive substance:

“An explosive substance (or mixture) is a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.”¹ (The underlining is ours.)

11. According to this definition, for a substance to be explosive, the substance or mixture of substances must have the capacity in itself to generate such explosion. It is our opinion that the condition of being a dust or a mixture of dust and air is not sufficient condition to generate an explosion. In some dusts, sufficient condition will be granted by the proper nature of the substance originating it; and, in other dusts, coming from non-intrinsically explosive substances, the explosion will only occur given the combination of other conditions, as already mentioned.

Consequently, we believe that it would be a mistake to create a new class of hazard in the GHS for those dusts or mixtures of dust with air coming from substances which are not intrinsically explosive, as it would go against the GHS classification criterion. Moreover, we consider that these do not meet the definition of “explosive substance.”

Hazard Communication Through SDS

12. We support assessing the need to incorporate new communication or clarification elements to those already existing, for completing the Safety Data Sheets (SDS), in order to make sure that the dust explosion hazard takes into account the condition enumerated in Annex 1. This is the approach we deem most effective in addressing the issue in question. Besides, the GHS does not require the substances or mixtures to be the object of classification in order to be able to use them. The last sentence of item A 4.2.1 of GHS reads:

¹ GHS, Chapter 2.1 Explosives, Section 2.1.1.1, p 43. The same definition is in Chapter 1.2 Definitions and Abbreviations, p 12.

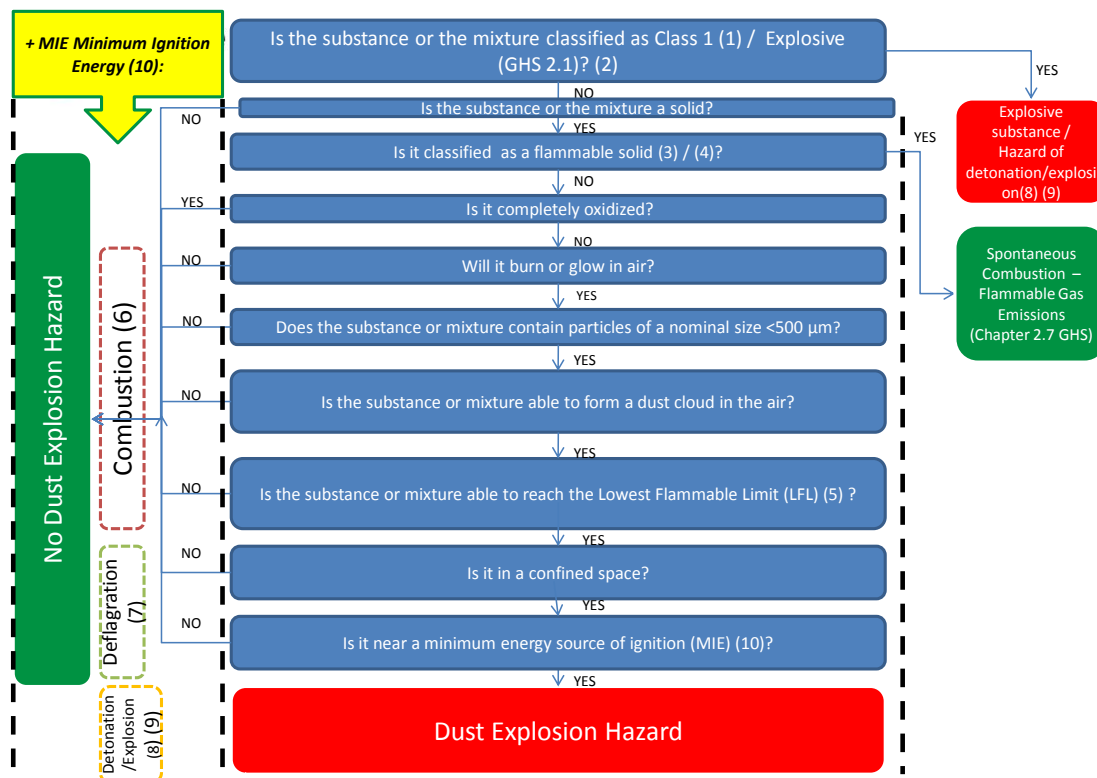
“...An SDS is a well-accepted and effective method for the provision of information, and may be used to convey information for substances or mixtures that do not meet or are not included in the GHS classification criteria.”

Conclusion

In conclusion, we believe that:

- Creating a new class of hazard in the GHS for those dusts or mixtures of dust with air coming from substances which are not intrinsically explosive, is not justified, as it would go against the GHS classification criterion.
- These types of dusts do not meet the definition of “explosive substance”.
- Safety Data Sheets (SDS) are the instrument most effective in approaching the issue in question. We support assessing the need to incorporate new communication or clarification elements to those already existing, taking into account the simultaneous condition enumerated in Annex 1.

Annex I – Flowchart to identified dust explosion hazard



(1) **Class 1** comprises explosive substances (a substance which is not itself an explosive but which can form an explosive atmosphere of gas, vapour or dust is not included in Class 1), except those that are too dangerous to transport or those where the predominant hazard is appropriate to another class. [Recommendations on the Transport of Dangerous Goods: Model Regulations (18th Revised Edition), section 2.1.1.1. point (a)]

(2) **Definition of “Explosive Substance” in GHS:** An explosive substance (or mixture) is a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause to the surroundings. Pyrotechnic substances are included even when they do not evolve gases. ²² [GHS, Section 2.1.1.1]

(3) **Class 4 - Flammable solids:** Solids which under conditions encountered in transport, are readily combustible or may cause or contribute to fire through friction; self-reactive substances which are liable to undergo a strongly exothermic reaction; solid desensitized which may explode if not diluted sufficiently. [Recommendations on the Transport of Dangerous Goods: Model Regulations (18th Revised Edition), section 2.4.1.1. point (a)]

(4) **Definition of “Flammable Solid” in GHS:** A flammable solid is a solid which is readily combustible, or may cause or contribute to fire through friction. [GHS, Section 2.7.1]

- (5) **Lower Flammable Limit (LFL):** The lowest concentration of a combustible substance in a gaseous oxidizer that will propagate a flame, under defined test conditions. [NFPA 68,2013]
- (6) **Combustion:** A chemical process of oxidation that occurs at a rate fast enough to produce heat and usually light in the form of either a glow or flame. [NFPA 69, 2013]
- (7) **Deflagration:** Propagation of a combustion zone at a velocity that is less than the speed of sound in the unreacted medium. [NFPA 68,2013]
- (8) **Detonation:** Propagation of a combustion zone at a velocity greater than the speed of sound in the unreacted medium. [NFPA 68,2013]
- (9) **Explosion:** The bursting or rupturing of an enclosure or a container due to the development of internal pressure from a deflagration. [NFPA 68,2013]
- (10) **Minimum Ignition Energy (MIE):** The minimum amount of energy released at a point in a combustible mixture that causes flame propagation away from the point, under specified test conditions. [NFPA 68,2013]
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