

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

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**Issues relating to the Globally Harmonized System
of Classification and Labelling of Chemicals (GHS)**

Harmonization of the classification for “supply and use” and “transport” on the basis of GHS

Transmitted by the European Chemical Industry Council (CEFIC)

Comparison TDG/CLP substances lists

1. The Sub-Committee of Experts on GHS discussed the issue of the development of a harmonized classification list. In this context the UNECE secretariat submitted at the nineteenth session of the Sub-Committee document INF.7 comparing the classification of substances which are deemed to be the most commonly transported (Dangerous Goods List as contained in the United Nations Recommendations on the Transport of Dangerous Goods) with that contained in table 3 (List of harmonized classification and labelling of hazardous substances) of Annex VI of Regulation (EC) No 1272/2008 (CLP Regulation). The document highlights the differences between the GHS classification according to the TDG regulations, and the GHS classification according to the CLP Regulation. Although both the TDG and the CLP list are based on the same criteria, less than half of the listed substances show an identical classification. Therefore the UNECE secretariat raised the question on how to deal with these discrepancies.

2. A review of the discrepancies reveals that a simple harmonization of the two lists is not feasible as many of the differences are due to the divergence in purpose and functions of the two regulations or due to the differences within the underlying data. Examples in the annex further elucidate existing differences between the two lists.

Sector specific scope

3. It has to be borne in mind that the two involved sectors have different needs and protection goals and therefore have different guiding principles on which the regulations are based on. The substances individually mentioned within the list of the transport sector focuses on the commercial goods most commonly carried and assigns them to one of nine classes according to the hazard or the most predominant of the hazards they present during transport, whilst considering the type of containment to be used. The further assignment to packing groups (I, II or III), representing the degree of danger within a class or division, is used to select appropriate packagings, tanks and consignment procedures.

4. The list contained in Annex VI of the CLP Regulation, which serves the supply and use sector, has its prime focus on the following health hazards: carcinogenic, mutagenic and toxic to reproduction (CMR) properties and respiratory sensitization. For those hazard classes not mentioned in the list, manufacturers or importers are required to self classify according to the CLP classification criteria for a substance on all relevant end points.

5. Thus, simply replacing the classifications within the TDG list with corresponding classifications from the supply and use sector is not an option as the lists serve two different sectors and such a move would have detrimental consequences for the safe transport of many dangerous goods.

Harmonization concept

6. Any attempt to harmonize classifications for transport (TDG) and supply and use (CLP) should be done on a case by case basis. To support harmonization and achieve long-term benefits of applying GHS criteria for transport classification, we suggest a concept based on the following principles:

- (a) A harmonized list of classifications (GHS substance list) should be implemented at UN level;
- (b) The classification and data selection process for harmonized classifications should be known by and be relevant to all sectors involved;
- (c) Where possible, a harmonized GHS classification should be agreed;
- (d) Necessary and justifiable sector differences should be explained by notes within the two lists.

Transport specific needs

7. For the purpose of transport classification, a special dangerous goods list will remain necessary, because:

- (a) Dangerous goods are substances, solutions, mixtures and articles, which pose a risk to health, safety, security, property and/or to the environment in their physical state during carriage;
- (b) Transport of dangerous goods is regulated to prevent or mitigate, as far as possible, incidents that could endanger public safety or harm the environment. Therefore dangerous goods are authorized for carriage when contained in compliance with the dangerous goods regulations only;
- (c) Dangerous goods regulations include provisions for the definition of classes, general packing requirements, performance testing procedures, marking, labeling or placarding, and transport documents;
- (d) Dangerous goods are assigned to one of nine classes according to the hazard or the most predominant hazard they represent whereby chronic risks, like carcinogenicity, teratogenicity and mutagenicity are not deemed to be relevant to transport;
- (e) For the purpose of selecting an appropriate packaging for dangerous goods, substances are in principle assigned to packing groups (exceptions of this rule are the classes 1, 2, 6.2 and 7);

- (f) An essential element of the dangerous goods classification for transport is the "precedence of hazard" principle, used for determining the primary risk and/or the most stringent packing group. According to this principle not more than 3 (and additionally the environmentally hazard) need to be considered for the dangerous goods classification and hazard communication. This principle is completely unknown in the supply and use sector, where all end points must be taken into account in the classification.
- (g) For reasons of practicability the dangerous goods list can cover individual entries for the substances most commonly carried only (such as acetic acid, ethanol, etc.). Other substances/mixtures carried have to be assigned to "generic" or "not otherwise specified (n.o.s.)" entries.
- (h) A harmonized classification can be applied to specifically named entries only. This, however, is not possible to generic and n.o.s. entries.
- (i) More specifically named/ entries in the dangerous goods list meeting the defining criteria of Classes 1 to 8 have already been classified. Where the category of risk (physical state or the packing group) for a substance differs from that of the listed substance, the hazard characteristics of Classes 1 to 8 which have not been mentioned in the dangerous goods list need to be considered for the purpose of transport.
- (j) In addition, certain hazard characteristics of Class 9 have to be considered. These include non-intrinsic properties (e.g. indication of molten state or elevated temperature condition) and also intrinsic properties (e.g. hazardous to the aquatic environment).
- (k) Not all hazards relevant for transport are included in the GHS, (e.g. Class 6.2 (infectious substances) and Class 7 (radioactive material) as well as hazards caused by the special physical state, such as elevated temperature substances).
- (l) Some criteria are explicitly different from the GHS because of the different objective of transport safety (e.g. acute inhalation toxicity for liquids, experiences with corrosive substances).
- (m) An unconditional adoption of the GHS criteria would have negative consequences for the transport of substances. The current classifications are principally based on the "rationalized approach" a set of rules within the Guiding Principles of the UN Model Regulations for the Transport of Dangerous Goods which takes into consideration transport specific needs and acceptable transport conditions for classification. The efforts required to manage deviations from the rationalized approach would be considerably higher than explaining a deviation of a transport classification from GHS criteria - without having an apparent safety or environmental benefit.

Annex

Examples for the different types of discrepancies between TDG list and CLP list

Discrepancies between CLP and TDG classification can be caused by either different data sets which use can no longer be justified e.g. out of date, wrong or incomplete sets or by intentional but justified deviations from GHS classification criteria:

A. Non justified differences, "dated data"

- The TDG list contains some classifications for which current data show that the differences are no longer justified (e.g.: acute toxicity of mercury and dimethyldisulfide);
- The CLP list contains some classifications which deviate from GHS criteria (e.g. isophoron-diisocyanate: environmentally hazardous Aquatic Chronic 2, which is not justified according to valid ecotox data showing Aquatic Chronic 3 only, i.e. “not environmentally hazardous”).

B. Justified differences

1. TDG: reflecting particular needs for transport

- Certain substances (identified by special provision 279) have been intentionally classified based on experience rather than on the strict application of classification criteria. These TDG classifications are stricter than if GHS would be applied e.g. Phenol solid (UN 1671).
- For class 8, the UN Model Regulations explicitly state in subsection 2.8.2.2 that the classification of substances specifically listed by name is based on experience. Therefore differences with the criteria based classifications are justified. These classifications are often less strict than the classifications based on test results e.g. Sodium hydroxide solution (UN 1671).
- For some properties a different decision logic is implemented in the transport regulations, e.g. a substance or preparation meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC₅₀) in the range of packing group I, but having a toxicity through oral ingestion or dermal contact only in the region of packing group III or less, are allocated to class 8 (see subsection 2.8.2.3 of the UN Model Regulations) e.g. Cyanuric chloride (UN 2670).

UN Model Reg. Rev.16						CLP Annex VI			Classif. TDG-GHS	Classif. CLP -GHS
UN No	Proper shipping name	Class or Div	Sub. risk	PG	SP	CAS No	Classification	Specific Conc. Limits, M-factors		* highest min. classif
							Haz Class +Cat			
1671	PHENOL, SOLID	6.1		II	279	108-95-2	Muta. 2 Acute Tox. 3 * Acute Tox. 3 * Acute Tox. 3 * STOT RE 2 * Skin Corr. 1B	* Skin Corr. 1B: $C \geq 3 \%$ Skin Irrit. 2: $1 \% \leq C < 3 \%$ Eye Irrit. 2: $1 \% \leq C < 3 \%$	Ac.tox.2	Ac.tox.3* Skin Corr.1B
1824	SODIUM HYDROXIDE SOLUTION	8		II		1310-73-2	Skin Corr. 1A	Skin Corr. 1A: $C \geq 5 \%$ Skin Corr. 1B: $2 \% \leq C < 5 \%$ Skin Irrit. 2: $0,5 \% \leq C < 2 \%$ Eye Irrit. 2: $0,5 \% \leq C < 2 \%$	Corr.1B	Skin Corr. 1A
2670	CYANURIC CHLORIDE	8		II		108-77-0	Acute Tox. 2 * Acute Tox. 4 * Skin Corr. 1B Skin Sens. 1	STOT SE 3: $C \geq 5 \%$	Corr.1B	Skin Corr. 1B Ac.Tox. 2 *

2. CLP: Reflecting particular needs in the supply & use sector:

- The main focus of the CLP list is hazard classes not implemented for transport;
- Not all hazard classes are covered by the CLP list;
- The classification for acute toxicity in the CLP list must be seen as minimum classification (lower categories possible), since they were just translated from existing classifications based on the Dangerous Substance Directive (67/548/EEC), where different criteria exist without checking the underlying information. (They are been marked with “*” in the list of the above mentioned INF.7).