

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

10 November 2011

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

Fortieth session

Geneva, 28 November – 7 December 2011

Item 9 (a) of the provisional agenda

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

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

Twenty-second session

Geneva, 7 – 9 December 2011

Item 4 (c) of the provisional agenda

**Implementation of the GHS:
Cooperation with other bodies or international
organizations**

**Harmonization of classification criteria for transport
with the classification criteria of the GHS for substances
and mixtures corrosive to skin**

**Transmitted by the International Council of Chemical
Associations (ICCA)**

Background

Contribution to Work stream (c) of document UN/SCEGHS/21/INF.6 -
UN/SCETDG/39/INF.14:

“Identify differences in assignment to categories in lists provided by different regulations and guidance documents for a few representative common substances. Analyze the underlying data and origin of these differences and use these results for the work under paragraphs a, b and d.”

Summary

This document identifies typical differences in skin corrosion classifications listed in the Annex VI to European Regulation 1272/2008 in relation to the dangerous goods list of the UN Model Regulations. Taking into consideration the different scope of GHS and TDG a concept for a combined GHS/TDG-substance list is presented.

Introduction

1. The harmonization of the classification criteria for transport and for supply and use needs to be pushed forward to avoid confusion during the transport, based on contradicting classifications and label information for substances and mixtures. The chemical industry appreciates the work of the informal joint correspondence group on corrosivity criteria and would like to contribute information and proposals regarding the terms of reference for the work (c).

I. Differences based on different scope of GHS and UN MR

(no reference to [1] , new issue)

2. While scope of GHS subcategories is communication of the intrinsic hazards of a material (see GHS 1.1.2), scope of UN MR packing group is determination of packing requirements appropriate for safe transport (see UN MR 2.8.2.1).

3. Especially for the hazard skin corrosion, there is no differentiation in the communication based on the subcategories (the same H-statement is used for subcategory 1A, 1B and 1C).

4. Based on this different scope, allocation of packing groups of class 8 substances mentioned by name in the dangerous goods list is not always based on test data, but on experience. New substances, including mixtures, can be assigned to packing groups on the basis of the length of time of contact necessary to produce full thickness destruction of human skin in accordance with the criteria in 2.8.2.4. Chemical Industry proposes to keep the differences arising from the different scope, as the experience shows that the linked packing group provides a sufficient level of safety during transport. To avoid confusion, dissenting classifications (not only for corrosive substances, as this applies also to other classes) should be declared in a combined GHS/TDG-substance list. For a general approach to such list see UN/SCETDG/38/INF.53. Examples for class 8 substances are given in Annex I of this document.

II. Translation of classifications using Annex VII of the CLP regulation

(reference to: [1] Annex II para 21)

5. Annex VII provides the translation of R-Phrases from EU directive 67/548/EC into CLP classifications (H-Phrases). For the translation of the classification corrosive to the skin, a worst case approach has been selected (see table 1).

Original EU directive 67/548/EC classification Symbol and R-Phrase	Translated CLP-regulation 1272/2008 classification H-Phrase and category
C, R35	1A
C, R34	1B

Table 1

6. This translation rules have been applied for the generation of Annex VI, table 3.1 to the CLP regulation from the Annex I substance list of EU directive 67/548/EC, which means, that table 3.1 contains worst case classifications for hazard class corrosive to skin.

7. There is no classification into subcategory 1C in the Annex VI of the CLP regulation (e.g. see example phosphoric acid in annex I of this document). If this is applied for the transport classification, it will lead to a more stringent packing group and is in many cases not acceptable and not necessary for transport to provide a safe transport, which has been done for decades. There is no safety-relevant justification for these significant changes which will lead to severe operational difficulties, as

certain tanks and large packaging cannot be used any longer, as well as exemptions like limited or excepted quantities transport. Additionally many consignees will have to reconstruct their unloading sites due to restrictions of bottom valves.

8. Additional, many classifications in CLP Annex VI are based on dated data (see UN/SCETDG/38/INF.53).

Proposal

9. Do not harmonize TDG-list class 8 entries with CLP list classifications without individual check of the consequences to transport conditions regarding safety benefit.

III. Specific concentration limits for substance

(reference to: [1] Annex II para 23 (a))

10. Some substances are listed with special concentration limits in transport and in supply and use lists. These can be different for supply and use and transport. When they are applied for mixtures, this will lead to different classifications (Example see table 2).

Substance	CAS-Number	CLP Regulation 1272/2008	UN Model Regulations	Comment
Acetic acid...%	64-19-7	Flam. Liq. 3 > 90% Skin Corr. 1A 25 – 90% Skin Corr 1B 10 – 25% Skin Corr 2	> 80% 8+3, PG II 50 – 80% 8, PG II 10 – 50% 8, PG III	PG II provides appropriate level of safety even for 100 % acetic acid.
Table 2				

Proposal

11. Add acetic acid to the selection of common substances checked by the working group.

IV. Comparison of Annex VI of CLP and the Table of Dangerous Goods (UN/SCETDG/37/INF.12)

(reference to: [1] Annex II para 25)

12. Based on the comparison provided by the secretariat (UN/SCETDG/37/INF.12 - UN/SCEGHS/19/INF.7), the following figures have been extracted for the classification criteria corrosive to skin. They are an approximation, because the list contains substances with more than one hazard class, but for table 3, only class 8 was considered:

Table 3					
Sub category	Number of entries in the comparison in UN/SCETDG/37/INF.12	More strict PG	Same PG	Less strict PG	Not applicable (Gas)
1A	69	--	21	38	10
1B	148	26	73	32	17
Sum	217	26	94	70	27

13. It should be considered, that for gases no packing groups are provided in TDG classification and that there are not only deviations to less strict packing groups.

Proposal

14. An international list of classifications should contain columns for classifications according to supply and use and according to transport. These classifications might vary. Add a special provision to indicate that different classifications are correct. In the list all current transport classifications should be kept, as they are already internationally accepted and used for many years. The concentration limits for the classification of mixtures should be harmonized based on the thresholds of transport. Due to the different structure (based on CAS-number versus UN-number) the list should be limited to substances which are really the same, as UN-Numbers can summarize many CAS-numbers.

Reference:

[1] UN/SCEGHS/21/INF.6 - UN/SCETDG/39/INF.14

Annex I

Examples of entries in a combined GHS/TDG-substance list

Harmonized list of classifications											
GHS classifications from CLP table 3.1					Dangerous Goods Classification, from UN MR 3.2						Proposed Text of Special Provisions in UN MR 3.3
Int. Chem. ID	CAS No	Hazard Class +Cat	Haz Stat	Specific Conc. Limits, M-factors	UN No	PROPER SHIPPING NAME and description	Class or Div.	Sub. risk	PG	SP	
phosphoric acid ... %, orthophosphoric acid ... %	7664-38-2	Skin Corr. 1B	H314	Skin Corr. 1B; H314: C $\geq 25.0\%$ Skin Irrit. 2; H315: $10\% \leq C < 25\%$ Eye Irrit. 2; H319: $10\% \leq C < 25\%$	1805	PHOSPHORIC ACID, SOLUTION	8		III	223 3XX	SP3XX Hazard category 1B is a worst case classification according Annex VII to CLP
sodium hydroxide; caustic soda	1310-73-2	Skin Corr. 1A	H314	Skin Corr. 1A; H314: C $\geq 5\%$ Skin Corr. 1B; H314: $2\% \leq C < 5\%$ Skin Irrit. 2; H315: $0,5\% \leq C < 2\%$ Eye Irrit. 2; H319: $0,5\% \leq C < 2\%$	1824	SODIUM HYDROXIDE SOLUTION	8		II	3XY	SP3XY Experience in transport justifies different package group (see UN Model Regulations 2.8.2.2)

Harmonized list of classifications											
GHS classifications from CLP table 3.1					Dangerous Goods Classification, from UN MR 3.2						Proposed Text of Special Provisions in UN MR 3.3
Int. Chem. ID	CAS No	Hazard Class +Cat	Haz Stat	Specific Conc. Limits, M-factors	UN No	PROPER SHIPPING NAME and description	Class or Div.	Sub. risk	PG	SP	
sulphuric acid ... %	7664-93-9	Skin Corr. 1A	H314	Skin Corr. 1A; H314: C ≥ 15 % Skin Irrit. 2; H315: 5 % ≤ C < 15 % Eye Irrit. 2; H319: 5 % ≤ C < 15 %	1830	SULPHURIC ACID with more than 51% acid	8		II	3XY	SP3XY Experience in transport justifies different package group (see UN Model Regulations 2.8.2.2)
styrene	100-42-5	Flam. Liq. 3 Acute Tox. 4 * Eye Irrit. 2 Skin Irrit. 2	H226 H332 H319 H315	*	2055	STYRENE MONOMER, STABILIZED	3		III		[<i>Example for an entry without any discrepancies</i>]
3,3'-iminodi (propylamine); dipropylene triamine	56-18-8	Acute Tox. 2 * Acute Tox. 3 * Acute Tox. 4 * Skin Corr. 1A Skin Sens. 1	H330 H311 H302 H314 H317		2269	3,3'-IMINODIPROPYLAMINE	8		III	3XZ	SP3XZ Lethality of corrosive mists is no toxic property, s. UN MR 2.8.2.3

Harmonized list of classifications

GHS classifications from CLP table 3.1					Dangerous Goods Classification, from UN MR 3.2						Proposed Text of Special Provisions in UN MR 3.3
Int. Chem. ID	CAS No	Hazard Class +Cat	Haz Stat	Specific Conc. Limits, M-factors	UN No	PROPER SHIPPING NAME and description	Class or Div.	Sub. risk	PG	SP	
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone diisocyanate	4098-71-9	Acute Tox. 1 Corrosive Cat. 1C STOT SE 3 Resp. Sens. 1 Skin Sens. 1	H330 H314 H334 H317	Resp. Sens. 1; H334: C \geq 0,5 % Skin Sens.1; H317: C \geq 0,5 %	2290	ISOPHORONE DIISOCYANATE	8		III	3XZ	SP3XZ Lethality of corrosive mists is no toxic property, s. UN MR 2.8.2.3
2,4,6-trichloro-1,3,5-triazine; cyanuric chloride	108-77-0	Acute Tox. 2 * Acute Tox. 4 * Skin Corr. 1B Skin Sens. 1	H330 H302 H314 H317	STOT SE 3; H335: C \geq 5 %	2670	CYANURIC CHLORIDE	8		II	3XZ	SP3XZ Lethality of corrosive mists is no toxic property, s. UN MR 2.8.2.3
acetic acid ... %	64-19-7	Flam. Liq. 3 Skin Corr. 1A	H226 H314	Skin Corr. 1A; H314: C \geq 90 % Skin Corr. 1B; H314: 25 % \leq C < 90 % Skin Irrit. 2; H315:	2789	ACETIC ACID, GLACIAL or ACETIC ACID SOLUTION, more than 80% acid, by mass	8	3	II	3XY	SP 3XY Experience in transport justifies different package group (see UN Model Regulations 2.8.2.2)

Harmonized list of classifications											
GHS classifications from CLP table 3.1					Dangerous Goods Classification, from UN MR 3.2						Proposed Text of Special Provisions in UN MR 3.3
Int. Chem. ID	CAS No	Hazard Class +Cat	Haz Stat	Specific Conc. Limits, M-factors	UN No	PROPER SHIPPING NAME and description	Class or Div.	Sub. risk	PG	SP	
				10 % ≤ C < 25 % Eye Irrit. 2; H319: 10 % ≤ C < 25 %	2790	ACETIC ACID SOLUTION, not less than 50% but not more than 80% acid, by mass	8		II	3XY	SP 3XY Experience in transport justifies different package group (see UN Model Regulations 2.8.2.2)
					2790	ACETIC ACID SOLUTION, more than 10% and less than 50% acid, by mass	8		III	3XY	SP 3XY Experience in transport justifies different package group (see UN Model Regulations 2.8.2.2)
Zinc chloride	7646-85-7	Acute Tox. 4 * Skin Corr. 1B Aqu. ac. 1 Aqu. chron. 1	H302 H314 H400 H410	STOT SE 3; H335: C ≥ 5 %	1840	ZINC CHLORIDE SOLUTION	8		III	223 3XX	SP3XX Hazard category 1B is a worst case classification according Annex VII to CLP.
					2331	ZINC CHLORIDE, ANHYDROUS	8		III	3XX	SP3XX Hazard category 1B is a worst case classification according Annex VII to CLP.
Iodine	7553-56-2	Acute Tox. 4 * Acute Tox. 4 * Aquatic Acute 1	H332 H312 H400		3495	IODINE	8	6.1	III	279	SP 279 The substance is assigned to this classification or packing group based on human experience rather than the strict application of classification criteria set

Harmonized list of classifications

GHS classifications from CLP table 3.1					Dangerous Goods Classification, from UN MR 3.2						Proposed Text of Special Provisions in UN MR 3.3
Int. Chem. ID	CAS No	Hazard Class +Cat	Haz Stat	Specific Conc. Limits, M-factors	UN No	PROPER SHIPPING NAME and description	Class or Div.	Sub. risk	PG	SP	
											out in these regulations.