



**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****Forty-second session**

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**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-fourth session**

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Item 3 of the provisional agenda

Hazard communication issues**Hazard communication in the supply/use sector for
substances and mixtures “Corrosive to metals”****Transmitted by the International Association for Soaps, Detergents and
Maintenance Products (AISE) on behalf of the informal
correspondence group¹****Background documents**

Informal document INF.31 (19th session); ST/SG/AC.10/C.4/2010/7; informal documents INF.21, INF.32 and INF.22 (20th session); informal document INF.10 (21st session), informal documents INF.25 and INF.30 (22nd session); and informal document INF.9 (23rd session)

Introduction

1. At the 19th session of the Sub-Committee, AISE highlighted in INF.31 some potential issues which may arise if the physical hazard “corrosive to metals” is adopted for the supply and use sector:

¹ In accordance with the programme of work of the Sub-Committee for 2011–2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76, para. 116 and ST/SG/AC.10/38, para. 16).

- (a) Some substances and mixtures will be classified as “corrosive to metals” for supply while not being classified as “corrosive to skin/eyes”. This will mean that substances or mixtures either classified as irritant to skin and/or eyes or not classified for these health hazards will still be labelled with a corrosion pictogram derived from the corrosive to metals classification;
 - (b) The same hazard pictogram is used for physical-chemical corrosion on metals and for human health local irreversible effects on human tissue. This could be misleading for the end-user in that it makes it difficult to differentiate (and therefore know when to take extra care during use) between products that are truly corrosive to skin and those only corrosive to metals;
 - (c) The test method for metal corrosion does not reflect typical consumer or professional use conditions as it was designed to cover transport conditions, in particular air transport;
 - (d) According to transport legislation, products classified as corrosive to metals and supplied in relatively small containers (such as those typically used for consumers), do not require the corrosive label as limited quantity exemptions apply.
2. At its twentieth session in December 2010, the Sub-Committee agreed the following competent authority option in paragraph 1.4.10.5.5 of the GHS to address potential issues which may arise if the physical hazard ‘Corrosive to Metals’ is adopted for supply/use situations:
- “Where a substance or mixture is classified as corrosive to metals but not corrosive to skin and/or eyes, the competent authority may choose to allow the hazard pictogram linked to corrosive to metals to be omitted from the label of such substances or mixtures which are in the finished state, packaged for consumer use.”*
3. However, some delegations considered this amendment to be a temporary solution thus the Sub-Committee agreed that an informal correspondence group should be established to develop a permanent solution in the biennium 2011 – 2012.
4. This document summarises the quantitative data related to the issue under consideration (as requested at the 23rd session) and details the possible permanent solution options identified by the correspondence group for further consideration by the Sub-Committee.

Scope of issue

5. As the Sub-Committee will be aware, Regulation (EC) No. 1272/2008 (the Regulation implementing the GHS in the European Union, also known as “CLP Regulation”) does not become mandatory for mixtures until 1st June 2015 thus some companies have yet to finalise the definitive GHS/CLP classification of their products. However, based on feedback from the detergent and cleaning product industry sector, there is an indication that the following product types are expected to be classified as corrosive to metals for supply but potentially not classified as corrosive to skin/eyes (i.e. not skin corrosion/irritation category 1 or serious eye damage/eye irritation category 1 based on test data): limescale removers, acidic toilet cleaners, bathroom cleaners, hypochlorite bleach products, multipurpose cleaners, hard surface cleaners and laundry additives.
6. Feedback from the detergent and cleaning product industry sector also indicates that the corrosive to metals hazard communication issue primarily impacts on products (i.e. mixtures) for the consumer market. Whilst the number of product types potentially

impacted by this issue is low, the current estimate is that these represent around 620 million end-user units annually in the European Union. These are products from the categories mentioned in paragraph 5, which potentially could be used at least once a week, if not more frequently. As more information becomes available on substances/mixtures regarding metal corrosion for supply/use, it is possible that other product types may be impacted. Also, product volumes of impacted product types may increase should other countries/regions adopt the classification corrosive to metals for supply/use.

7. In addition to classification as corrosive to metals, it is estimated that the product types listed in paragraph 5 are likely to be classified mainly as Eye irritant category 2 with many also Skin irritant category 2 based on test data (either data on the mixture itself or data on similar tested mixtures). However, it is not clear yet whether the existing test data could be used to support eye irritant category 2 for all the listed product types.

8. The product types listed in paragraph 5 are typically sold in relatively small containers to consumers (the institutional and industrial sector have bigger pack sizes). For example, typical pack sizes for surface cleaners (e.g. limescale removers, toilet cleaners, bathroom cleaners, hard surface cleaners) are 250 ml, 500 ml, 750 ml and 1 litre. Typical pack sizes for hypochlorite bleach products are 750 ml, 1 litre, 1.25 litres, 2 litres, 2.5 litres and 5 litres. These products are typically transported in cardboard outer cases containing between 6 to 15 bottles (e.g. 6 x 250 ml, 9 x 750 ml, 12 x 1.25 litres) except the 5 litre containers of hypochlorite bleach (e.g. 3 x 5 litre). It is understood that these outer cases are typically shipped as limited quantities according to transport legislation (i.e. the outer case does not carry the transport corrosion pictogram).

9. The corrosive to metals classification associated with the product types identified above in paragraph 5, is driven in the main by ingredients such as acids and bases e.g. various acids in the limescale removers, acidic toilet cleaners and bathroom cleaners. It is the alkalinity of the hypochlorite bleaches (sodium hydroxide is present for stability reasons) that drives the aluminium corrosion in this particular case.

10. Currently only one substance (hydroxylammonium chloride) is listed in Annex VI to the CLP Regulation (list of substances with harmonised classifications) with the classification corrosive to metals but not corrosive to skin or eyes. However, the hazard classification corrosive to metals was not used in the European Union classification and labelling system for supply prior to the adoption of CLP. CLP became mandatory for substances from 1st December 2010 thus information on substances classified as corrosive to metals for supply is becoming available. For example, a search of the European Chemicals Agency (ECHA) list of REACH² registered substances reveals several substances classified as corrosive to metals but not corrosive to skin/eyes (in some cases taking into account specific concentration limits (SCL) for skin/eyes) – these include sodium hydroxide, potassium hydroxide, sodium hypochlorite, glutaraldehyde, silver nitrate and hydrochloric acid.

11. A simple solution of 0.5% sodium hydroxide (i.e. sodium hydroxide is the only ingredient in the mixture classified for skin/eye effects) is likely to be corrosive to metals but would not be eye damage category 1 or skin corrosion category 1 (based on the SCL for sodium hydroxide in CLP Annex VI: Skin irritation category 2/Eye irritation category 2 $0.5\% \leq C < 2\%$). It is also worth noting here that a metal corrosion SCL of $\geq 0.1\%$ has been proposed for hydrochloric acid. If this SCL is confirmed, then a mixture containing 0.1% hydrochloric acid would be classified corrosive to metals and would carry a corrosive

² Regulation (EC) No.1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Authorisation and Restriction of Chemicals.

pictogram – assuming there are no other substances in the mixture classified for skin/eye effects, such a mixture would not be classified Eye damage category 1 or Skin corrosion category 1 (based on the SCL for hydrochloric acid in CLP Annex VI: Skin irritation category 2/Eye irritation category 2 $10\% \leq C < 25\%$).

12. There are some substances in the ECHA list of REACH registered substances which are not classified as corrosive to metals – these include lactic acid, sulfamic acid, lauric acid, stearic acid, edetic acid and acetic acid. In addition, there are some other substances in the ECHA list showing ‘data lacking’ against metal corrosion e.g. formic acid, citric acid, peracetic acid, sulphuric acid, hydrogen peroxide, formaldehyde and phosphoric acid. It is understood that a solution of 10% phosphoric acid is likely to be corrosive to metals but would not be classified eye damage category 1 or skin corrosion category 1 (based on the SCL for phosphoric acid in CLP Annex VI: skin irritation category 2/eye irritation category 2 $10\% \leq C < 25\%$).

Possible options for a permanent solution

13. Five options for a permanent solution plus associated GHS amendments are set out in the Annex to this document and are listed according to the level of support expressed by the correspondence group, options A and B having the most support so far.

14. In short, the five options are:

- Option A: Replace the corrosion pictogram in Table 2.16.2 with the exclamation mark pictogram;
- Option B: Replace the corrosion symbol in Table 2.16.2 with a new corrosive to metals only symbol;
- Option C: Competent authority option – may choose to allow use of a new corrosive to metals only pictogram or a new corrosive to skin/eyes only pictogram in specified cases;
- Option D: Delete the hazard pictogram label element completely for Corrosive to Metals;
- Option E: Delete the sentence in 1.4.10.5.5 altogether and revert back to the 3rd revised edition of the GHS in this part.

15. The options are further detailed in the Annex to this document.

Proposal

16. The Sub-Committee may wish to consider adopting one of the possible options detailed in the annex to this document as a more suitable solution to address the corrosive to metals hazard communication issue. Alternatively, as this issue appears to predominantly impact on detergent and cleaning products for the consumer market, the Sub-Committee may wish to consider staying with the current competent authority option in paragraph 1.4.10.5.5 rather than changing the existing corrosive to metals pictogram or introducing new pictograms.

Annex

Possible options for a permanent solution to address the identified issues associated with the adoption of the hazard class “corrosive to metals” in the supply/use sector with proposed amendments to the GHS

Option A: Replace the corrosion pictogram in Table 2.16.2 with an exclamation mark pictogram

Rationale

- (a) The hazard class “Corrosive to Metals” currently has the corrosion pictogram with the signal word “Warning” whereas skin corrosion category 1 and serious eye damage category 1 has the corrosion pictogram with the signal word “Danger” – suggest this could be confusing for the consumer;
- (b) The corrosion pictogram in the supply and use sector should only be used for skin corrosion category 1 and serious eye damage category 1;
- (c) The exclamation mark and signal word “Warning” is also used for “Hazardous to the ozone layer”;
- (d) A switch to the exclamation mark for the supply and use sector would not impact on transport as they could continue to use their version of the corrosion pictogram for products corrosive to metals.

In favour

- Hazard “Corrosive to Metals” is communicated throughout the “supply/use” sector including consumers.
- Corrosion pictogram only used for health hazards in the supply/use sector.
- No differentiation and no labelling differences between consumer and workplace.
- Pictogram still appears on the label
- Nothing changes for the transport sector i.e. the warning label for transport is retained and remains unchanged (GHS Annex 1 table would still show the transport pictogram).
- Avoids confusion for end-users (i.e. no corrosion pictogram from “corrosive to metals” on products only irritant or not classified for skin/eye effects).
- Eliminates potential consumer confusion arising from the use of different signal words with the corrosion pictogram
- Consistency with signal word “Warning”.
- No competent authority option introduced – will have harmonised labelling in all countries adopting this hazard class.

Against

- Hazard pictogram not related to the actual hazard – a pictogram that communicates corrosivity is replaced by a pictogram that does not relate to the actual hazard.

Proposed amendment to the GHS in relation to option A

Delete the corrosion symbol in Table 2.16.2 and insert the exclamation mark symbol in its place, i.e.

Table 2.16.2: Label elements for substances and mixtures corrosive to metals

<i>Category 1</i>	
Symbol	Exclamation mark
Signal word	Warning
Hazard statement	May be corrosive to metals

Consequential amendments

- Insert the following precedence rule in paragraph 1.4.10.5.3.1
“(d) If the corrosion symbol appears for skin corrosion or serious eye damage, the exclamation mark should not appear where it is used for corrosive to metals.”
- Delete the 3rd paragraph in 1.4.10.5.5;
- Delete the Note below Table 2.16.2 in Chapter 2.16;
- In Annex 1, table for Corrosive to Metals: replace the GHS corrosion pictogram with the GHS exclamation mark pictogram;
- In Annex 2 (table A2.16) and in Annex 3, section 3 (table for corrosive to metals): replace the corrosion symbol with the exclamation mark symbol;

Option B: Replace the corrosion symbol in GHS Table 2.16.2 with a new corrosive to metals only symbol



Rationale

- (a) The new corrosive to metals only pictogram is more related to the actual hazard;
- (b) A switch to the new corrosive to metals only pictogram for the supply/use sector would not impact on transport as they could continue to use their version of the corrosion pictogram for products corrosive to metals.

In favour

- Proposed solution is simple to understand and to apply;
- Pictogram still appears on the label;
- Hazard pictogram more related to the actual hazard;

- Corrosion pictogram only used for health hazards in the supply/use sector – avoids confusion for end-users (i.e. no corrosion pictogram from corrosive to metals on products only irritant or not classified for skin/eye effects);
- No competent authority option introduced – will have harmonised labelling in all countries adopting this hazard class;
- No differentiation and no labelling differences between consumer and workplace labelling;
- No change for transport i.e. the warning label for transport is retained and remains unchanged (GHS Annex 1 table would still show the transport pictogram). If the transport pictogram for corrosion is applied on the label of a single packaging, then this transport pictogram will be sufficient for supply/use.

Against

- Introduction of a new pictogram.

Proposed amendment to the GHS in relation to option B

Delete the corrosion symbol in GHS Table 2.16.2 and insert the corrosive to metals only symbol in its place, i.e.

Table 2.16.2: Label elements for substances and mixtures corrosive to metals

	<i>Category 1</i>
Symbol	Corrosive to metals only
Signal word	Warning
Hazard statement	May be corrosive to metals

Consequential amendments:

- Insert the following precedence rule in paragraph 1.4.10.5.3.1:
“(d) If the corrosion symbol appears for skin corrosion or serious eye damage, the corrosive to metals only symbol should not appear.”
- Delete the 3rd paragraph in 1.4.10.5.5;
- Delete the Note below Table 2.16.2 in Chapter 2.16;
- In Annex 1, table for Corrosive to Metals. replace the GHS corrosion pictogram with the new corrosive to metals only pictogram;
- In Annex 2 (table A2.16) and in Annex 3 section 3 (table for corrosive to metals): replace the corrosion symbol with the new corrosive to metals only symbol;

Option C: Competent authority option – may choose to allow use of a new corrosive to metals only pictogram or a new corrosive to skin/eyes only pictogram in specified cases

Rationale:

- (a) Use of the new corrosive to metals only or the new corrosive to skin/eyes only pictograms will enable the end-user to more readily distinguish between those substances/mixtures corrosive to skin (and hence by implication corrosive to eyes) and those only corrosive to metals but not corrosive to skin/eyes;
- (b) The possible use of the new corrosive to metals only or the new corrosive to skin/eyes only pictograms in the supply/use sector would not impact on the transport sector – transport labels would continue to use the existing combination pictogram.

In favour

- Easy to distinguish between those substances/mixtures corrosive to skin (and hence by implication corrosive to eyes) and those only corrosive to metals but not corrosive to skin;
- Emergency responders would know instantly what type of hazard i.e. physical or health – may adopt different approach if know that only dealing with corrosive to metals rather than corrosive to skin;
- No need to differentiate between consumer and workplace;
- Pictogram appears on the label – pictogram considered important for communication in that it serves as a quick visible reminder that need to take care when handling the product;
- No need to make modifications to any existing labels or even future labels, if not desired. Suppliers could continue to choose to use the combined pictogram even if authorities allowed them the choice of using the separated pictogram;
- No changes required by the transport sector. Transport labels would continue to bear the same (combination) pictogram;

Against

- More pictograms;
- Difficult to introduce new pictograms;
- Inconsistency between suppliers that choose to use the separate pictogram and those that do not;
- Impact on harmonisation - could lead to different labelling in different countries if progressed as a competent authority option;
- Potential impact on Chapters 3.2 and 3.3.

Proposed amendment to the GHS in relation to option C

1.4.10.5.5 Replace the third paragraph with the following text and pictograms:

“A competent authority may choose to allow a new corrosion pictogram (provided below) on the label of the immediate container of a product that is classified corrosive in accordance with only (a) Chapter 2.16, or (b) Chapters

3.2 and/or 3.3, but not both (a) and (b), unless that label must also display a Model Regulations on the Transport of Dangerous Goods’ pictogram for corrosion. The new corrosion pictogram would indicate:

- in the case of a product classified corrosive in accordance with Chapter 2.16 but not 3.2 or 3.3: the corrosive to metals (only) symbol; and,
- in the case of a product classified in one or both of Chapters 3.2 and 3.3, but not 2.16: the corrosive to skin/eyes (only) symbol.

CORROSIVE TO METALS and SKIN/EYES	CORROSIVE TO METAL (only)	CORROSIVE TO SKIN/EYES (only)
		

”

Option D: Delete the hazard pictogram label element completely for Chapter 2.16 – Corrosive to Metals (with consequential amendments throughout the GHS)

The signal word and hazard statement would remain and be applied throughout the “supply/use” sector including consumers.

Table 2.16.2 would be modified accordingly:

Table 2.16.2: Label elements for substances and mixtures corrosive to metals

	<i>Category 1</i>
Symbol	No symbol
Signal word	Warning
Hazard statement	May be corrosive to metals

Rationale

- (a) The corrosion pictogram would only be used for health hazards (skin corrosion category 1 and serious eye damage category 1) in the supply/use sector;
- (b) No impact on the transport sector as they would continue to use their version of the corrosion pictogram for products corrosive to metals.

In favour

- Hazard “Corrosive to Metals” is communicated throughout the “supply/use” sector including consumers.
- No need to tackle the difficulties with defining a “consumer sector” – many products sold as consumer products are also used professionally and in the workplace. For instance, the same product may be sold to, and used by, both consumers and professional users in which case differentiated labelling would cause disharmonisation and confusion.

- Nothing changes for the transport sector i.e. the warning label for transport is retained and remains unchanged (GHS Annex 1 table would still show the transport pictogram);
- No competent authority option introduced – will have harmonised labelling in all countries adopting this hazard class.

Against

- No pictogram on the label – pictogram may be considered important for communication in that it serves as a quick visible reminder that need to take care when handling the product.

Proposed amendment to the GHS in relation to option D

Delete the corrosion symbol in GHS Table 2.16.2 and insert the words “No symbol” in its place, i.e.

Table 2.16.2: Label elements for substances and mixtures corrosive to metals

	<i>Category 1</i>
Symbol	<i>No symbol</i>
Signal word	Warning
Hazard statement	May be corrosive to metals

Consequential amendments

- Delete the 3rd paragraph in paragraph 1.4.10.5.5;
- Delete the Note below Table 2.16.2 in Chapter 2.16;
- In Annex 1, table for Corrosive to Metals, replace the GHS corrosion pictogram with the words “No pictogram”;
- In Annex 2 (table A2.16) and in Annex 3, section 3 (table for corrosive to metals) replace the corrosion symbol with the words “No symbol”.

Option E: Delete the sentence in paragraph 1.4.10.5.5 altogether and revert back to the 3rd revised edition of the GHS in this part

Rationale

Only if it transpires, following a review of the quantitative data for substances/mixtures within scope, that there is no real issue.

In favour

- No change for some countries who have implemented GHS Rev. 3.

Against

- Does not address the potential issues highlighted in INF.31 (19th session) and ST/SG/AC.10/C.4/2010/7.
