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Global Harmonised System of classification and labelling of Chemicals

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- What is Global Harmonised system of classification and labelling of chemicals ?
- How and when is it implemented ?
 - Implementation in the EU
 - Implementation worldwide
- Who is responsible of Classification and labelling ?
- Should we be bothered ?
- What are the consequences for the steel industry?

UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

- Heads of State at the 1992 Rio Summit called for the development of a Globally Harmonized System for the Classification & Labelling of chemicals and writing of Safety Data Sheets, including appropriate training and capacity building (GHS).
- The Plan of Implementation of the World Summit on Sustainable Development (WSSD), adopted in Johannesburg in 2002, encourages countries to implement the GHS as soon as possible with a view to having the system fully operational by 2008.
- The GHS was adopted by the ECOSOC^[1] Subcommittee in December 2002 and endorsed by the Committee on the Transport of Dangerous Goods and the GHS (WGs: IOMC^[2], ILO^[3], OECD^[4], UNCETDG/GHS^[5]).

^[1] UN Economic and Social Council - ^[2] Inter-Organization Programme for the Sound Management of Chemicals - ^[3] International Labour Organization - ^[4] Organisation for Economic Co-operation and Development - ^[5] United Nations Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System



Objectives of GHS and implementation

- Objectives
 - Enhance the protection of human health and the environment by providing an internationally comprehensible system for hazard communication,
 - Provide a recognized framework for those countries without an existing system,
 - Reduce the need for testing and evaluation of chemicals, and
 - Facilitate international trade in chemicals whose hazards have been properly assessed and identified on an international basis,
- To address
 - harmonized criteria for **classification** of substances and mixtures
 - harmonized hazard communication elements (**labelling** and **SDS**).
- Each country implementing the GHS system can choose which part of this system it has to be implemented: it is called the “building block approach”.



Global status of GHS implementation

- Broad global acceptance of GHS as the newly emerging standard for chemical classification and labeling. Many countries are in the midst of working through implementation challenges).
- A number of jurisdictions are tailoring GHS to their current classification systems and regulatory processes. Eventual adoption of GHS by the European Union, Canada and the U.S. in 2010 (for substances) may encourage greater consistency across jurisdictions.
- Implementation timetables and deadlines for substances are more immediate than those for formulations and mixtures



Implementation in the European Union

- Adoption by the EU parliament on the 2nd of September of the EU GHS at the first reading.
- The regulation will replace the existing EU system and **is in line with REACH, i.e.**
 - Harmonises the CI&L
 - Obliges enterprises to classify their substances & mixtures themselves and to notify the CI&L
 - Establishes a harmonised list of substances classified at community level in Annex VI
 - Establishes a CI&L inventory , made up of all notifications and harmonised classification
- It ensure a smooth transition to a new system
 - Reclassification & labelling must be completed by 1.12.2010 for substances and 1.6.2015 for mixtures
 - The current directives will be repealed on 1 June 2015
 - During a transitory period both systems will be applied

REACH registration dossier

| | |
|--------------------------|---|
| <p>Joint information</p> | <p>Hazard information & testing proposals</p> <p>Classification and labelling</p> |
| <p>Choice</p> | <p>Chemical Safety Report</p> <p>Guidance on safe use</p> <p>Quality assessed</p> |
| <p>Company specific</p> | <p>Company and substance identity</p> <p>Manufacture and uses</p> <p>Exposure information</p> |



Hazard communication tool: Safety Data Sheets

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- The common REACH and the UN GHS communication tool is the Safety Data Sheets (16 headings): international harmonization.

1. identification of the substance/preparation and of the company/undertaking;
2. hazards identification;
3. composition/information on ingredients;
4. first-aid measures;
5. fire-fighting measures;
6. accidental release measures;
7. handling and storage;
8. exposure controls/personal protection;
9. physical and chemical properties;
10. stability and reactivity;
11. toxicological information;
12. ecological information;
13. disposal considerations;
14. transport information;
15. regulatory information;
16. other information.



- 3 specific elements added from REACH: DNEL / PNEC (8) + ES (annex) + C&L (15).

Should we be bothered by GHS ?

- The steel industry is a major user of substances and mixtures:
 - Ores & concentrates
 - Ferro-alloys
 - Inorganic and organic chemicals

Evaluate the downstream consequences on our products and process

- The steel industry is a manufacturer of substances & mixtures and we write safety data Sheets for steel products

Apply the new Cl&L regulation

What are the consequences ?

- Labelling and Safety data sheets
- Transport regulation
- PIC convention
- Seveso directive
- IPPC directive
- Workers legislation

Professional use

- Restrictions on marketing and use
- Waste legislation

Consumer use

Consequences could be very significant.

Examples of consequences of classification

- List of Substances of Very High Concern and steel industry
- Classification of borates

Autorisation and substitution

- ECHA

Publication of a list of 16 SVHC for the REACH annex XIV dossier (autorisation)

| Substance | CAS | EINECS | Authority | Reason | Steel |
|------------------------------|-----------|-----------|-----------|--------|--|
| Anthracene | 120-12-7 | 204-371-1 | Germany | PBT | Anthracenic compounds in coal tar (8 – 25 %) |
| Sodium dichromate, Dehydrate | 7789-12-0 | | France | CMR | packaging |

- SIN "Substitute it now!" SIN list: a blacklist of 267 chemicals published by a coalition of environmental campaign groups

Inclusion of strontium chromate used in some primer systems in the coil coating application.



Study case: borates (ATP 30)

| Boron - Compounds | Cas No | Classification | Labelling | Conc. Limits |
|-----------------------------------|---------------------------------------|----------------|-------------------|-------------------------|
| Boric acid | 10043-35-3 11113-50-1 | Repr. Cat.2 | T; R60-61; S53-45 | C>or=5.5 % T; R60-61 |
| Diboron trioxide | 1303-86-2 | Repr. Cat.2 | T; R60-61; S53-45 | C>or=3.1 % T; R60-61 |
| Disodium tetraborate anhydrous | 1330-43-4 12267-73-1 13840-56-7 | Repr. Cat.2 | T; R60-61; S53-45 | C>or=4.5 % T; R60-61 |
| Disodium tetraborate decahydrate | 1303-96-4 | Repr. Cat.2 | T; R60-61; S53-45 | C>or=8.5 % T; R60-61 |
| Disodium tetraborate pentahydrate | 12179-04-3 | Repr. Cat.2 | T; R60-61; S53-45 | C>or=6.5 % T; R60-61 |

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Study case: borates (ATP 31)

| Boron - Compounds | Cas No | Classification | Labelling | Conc. Limits |
|--|---|--|---|---|
| Sodium Perborate (low degree of fine particles) | 15120-21-5 11138-47-9 12040-72-1 7632-04-4 10332-33-9 | Oxydising Repr. Cat.2+3 Xn Xi | O;T;R61, R8, R22,R37,R41,R62; S53-45 | C>or=25 % T; R61;R22; R37;R41,R62 Etc... |
| Sodium Perborate (high degree of fine particles) | 15120-21-5 11138-47-9 12040-72-1 7632-04-4 10332-33-9 | Oxydising Repr. Cat.2+3 Xn Xi | O;T;R61, R8, R22, R23 ,R37,R41,R62; S53-45 | C>or=25 % T; R61;R22; R23 ;R 37;R41,R62 Etc... |
| Perboric acid – Hydrated forms(low degree of fine particles) | 13517-20-9 37244-98-7 10486-00-7 | Repr. Cat.2+3 Xi | T; R61,R37,R41,R62; S53- 45-47 | C>or=36% T; R61-37-41- 62 Etc.... |
| Perboric acid – Hydrated forms(high degree of fine particles) | 13517-20-9 37244-98-7 10486-00-7 | Repr. Cat.2+3 Xn Xi | T; R61, R20 ,R37,R41,R62; S53-45-47 | C>or=36% T; R61- R20 -37- 41-62 Etc.... |

Use of borax in the Metallurgy

Borax: $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$, Sodium Tetraborate Decahydrate
Metallurgical fluxes

Dissolve metal oxides is exploited in the recovery of metals such as brass, copper, lead and zinc from scrap or smelting slag.

- In ferrous metallurgy, a cover flux to prevent oxidation at the surface of the molten ingot.
- In welding, brazing, and soldering, covers the metal surfaces, excluding air and preventing oxidation. It also acts as a solvent and cleaning agent.

Research and development

‘Adding borates to stainless steel slags to facilitate recycling this waste into construction material’



Consequences of ATP 30

- Public use: in principle, CMR cat.1 and 2 should be “d’office” banned for preparations destined to large public

“Exceptions may be made in cases where there are no unacceptable risks or where the socio-economic benefits from using the substance (s) outweigh the risks »”.

- Professional use:
 - Constraints related to the use of the CMR 2 substances at work place
 - may be placed on the Substance of Very High Concerns , leading to Authorisation, in particular substitution.

Question: what about boron , coming from ferro-boron ?

Conclusions on classification and GHS

- The classification is the cornerstone of the chemical management (eg. SVHC list).
 - Used as a criteria in a lot of downstream legislation (plant classification,
 - Testing is complex and costly
 - reclassification is impossible (in practice).
- We should be careful about the implementation of GHS around the world, as the worst case approach is usually selected.



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Back up

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New key elements of the C&L

- The classification and labelling information are built with 3 elements: symbol + signal word + hazard statement

CODE
PRODUCT NAME

COMPANY NAME

Street Address
City, State, Postal Code, Country
Phone Number
Emergency Phone Number

DIRECTIONS FOR USE:
XXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX

Fill weight: XXXX Lot Number: XXXX
Gross weight: XXXX Fill Date: XXXX
Expiration Date: XXXX



Danger
Keep out of the reach of children.
Read label before use.

Highly flammable liquid and vapour.
Harmful if inhaled.
May cause liver and kidney damage through prolonged or repeated exposure.

Keep container tightly closed.
Keep away from heat/sparks/open flame-No smoking.
Use only outdoors or in a well-ventilated area.
Do not breath fume/gas/mist/vapours/spray.
Wear protective gloves and eye/face protection [as specified....]
Ground/bond container and receiving equipment.

IN CASE OF FIRE use [as specified] for extinction

FIRST AID
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Call a Poison Center or doctor/physician if you feel unwell.

Store in a cool, well-ventilated place.



UN Number
Proper shipping name

[Universal Product Code (UPC)]

Specific symbols

