# INTRODUCTION TO

## CLP Classification and labelling of mixtures

# AIMS

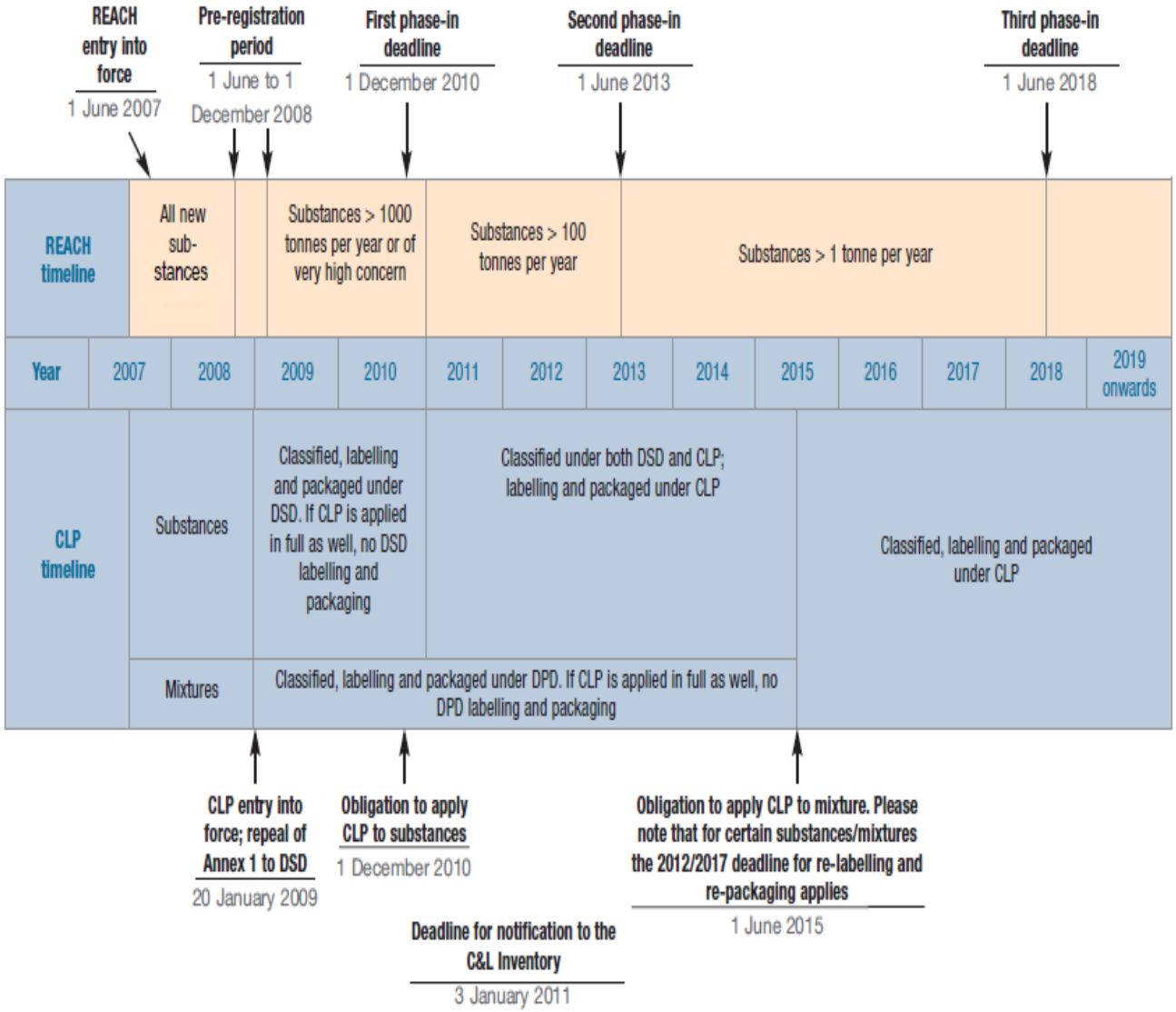
The aims of this case study is to enable to*:*

- use the CLP-definitions in classification and labelling of mixtures
- describe hazard communication in the form of labelling

# ABOUT REGULATION (EC) NO 1272/2008 (CLP)

| | |
|---|---|
| **GHS** | **Global Harmonized System for classification and labelling of chemicals**<br>FNs globalt harmoniserte system for klassifisering og merking av kjemikalier |
| **ECHA** | **European CHemicals Agency, responsible for implementing GHS in EU by establishing and updating an inventory for GHS substances**<br>Det europeiske kjemikaliebyrået ECHA har ansvar for å etablere og holde oppdatert et register over stoffers fareklassifisering og -merking. |
| **REACH** | Regulation (EC) No 1907/2006<br>**Registration,** registrering<br>**Evaluation,** vurdering<br>**Authorisation and Restriction,** godkjenning og begrensning<br>**CHemicals,** kjemikalier |
| **CLP** | Regulation (EC) No 1272/2008<br>**Classification.** klassifisering<br>**Labelling,** merking<br>**Packaging of Substances and Mixtures,** og emballering av stoffer og stoffblandinger |

# CLP and REACH Transitional Implementation timeframe




## Note

DPD –Dangerous Preparations Directive (1999/45/EC)
DSD – Dangerous Substances Directive (67/548/EEC)

These Directives are transposed in Ireland (as the 'CPL regulations') through S.I No 116 of 2003 (substances) and S.I No 62 of 2004 (preparations), as amended.

# CLP Label

**UNDER THE EU CLP REGULATION THE FOLLOWING CHANGES TAKE PLACE TO THE LABEL:**

1. **HAZARD (H) STATEMENTS REPLACE RISK (R) PHRASES**
2. **PRECAUTIONARY (P) STATEMENTS REPLACE SAFETY (S) PHRASES**
3. **HAZARD PICTOGRAMS REPLACE DANGER SYMBOLS**

Product name & Commercial Information

Hazard pictogram

Signal word

Hazard (H) & Precautionary (P) Statements

Transport Information

**Methanol**

Manufactured by
Company XYZ
Address

**Danger**

**Hazard Statements**
xxxxxxxxxxx
xxxx
**Precautionary Statements**
xxxxxxxxx
xxxxxxxxx


**UN1230 Methanol**

**Supplemental Information**
xxxxxxxxxxxxxxxxxxxxx

# Pictograms, Hazards and Precautionary Statements

| Current<br>ndication of Danger & corresponding symbols (CPL)<br>From Directives 67/548 /EEC & 1999/45/EC | | New*<br>Signal words & corresponding pictograms (CLP)<br>From Regulation EC 1272/2008 | | |
|---|---|---|---|---|
| **ndication of Danger** | **Symbol** | **Class/Category** | **Signal Word** | **Pictogram** |
| Explosive **E** |  | Explosives 1.1-1.3<br>Explosives 1.4 | Danger<br>Warning |  |
| tremely Flammable **F+**<br>Highly Flammable **F** |  | Flammable Liquids 1,2<br>Flammable liquids 3 | Danger<br>Warning |  |
| Oxidising **O** |  | Oxidising Liquids 1,2<br>Oxidising Liquids 3 | Danger<br>Warning |  |
| No Match | No Match | (NEW)<br>Gases under pressure, compressed gases | Warning |  |
| Corrosive **C** |  | Skin Corrosion 1A,1B,1C<br>Corrosive to metals 1 | Danger<br>Warning |  |
| Very Toxic **T+**<br>Toxic **T** |  | Acute Toxicity 1,2,3 | Danger |  |
| Harmful **Xn**<br>Irritant **Xi** |  | Acute Toxicity 4<br>Skin Irritation 2 | Warning<br>Warning |  |
| Harmful **Xn**<br>Toxic **T** |  | Aspiration hazard<br>Respiratory sensitization,<br>Germ cell mutagenicity, Carcinogenicity,<br>Reproductive toxicity, Specific target organ toxicity | Warning<br>or<br>Danger |  |
| Dangerous to the environment **N** |  | Hazardous to the aquatic environment 1 | Warning |  |

This is a non exhaustive list and is for illustrative purposes only. The user should refer to the Regulation (EC) 1272/2008 for more detailed information

CLP

CLP now uses **Hazard (H) statements**, which are:

| Hazard (H) Statements | |
|---|---|
| H200-H299 | Physical hazard |
| H300-H399 | Health hazard |
| H400-H499 | Environmental hazard |

CLP now also uses **Precautionary (P) statements**, which are:

| Precautionary (P) Statements | |
|---|---|
| | Examples |
| 100 General | P102 "Keep out of Reach of Children" |
| 200 Prevention | P201 "Obtain special instruction before use" |
| 300 Response | P310 "Call a poison centre" |
| 400 Storage | P410 "Store in a well ventilated place" |
| 500 Disposal | P501 "Dispose of container to..." |

A number of "leftover" EU Risk Phrases are now preceded with EUH codes and known as supplemental hazard information, for example:

| Risk Phrases | Supplemental Hazard Information |
|---|---|
| R1 | EUH001 "Explosive when dry" |
| R66 | EUH066 "Repeated exposure may cause skin dryness or cracking" |
| R59 | EUH059 "Hazardous to ozone layer" |

# CLP Regulation (EC) No. 1272 / 2008

## on the classification, labelling and packaging of substances and mixtures

[Guidance on Labelling and Packaging in accordance with Regulation (EC) No 1272/2008]

| Classification | | | Labelling | | | |
|---|---|---|---|---|---|---|
| Hazard- Class | Category | Abbreviation of classification (without H set) | Pictogram, code* | Signal -word | Code* | Warning of danger Text |
| Explosives | Unstable explosive | Unst. Expl. | GHS01 | | H200 | Unstable explosive |
| | Division 1.1 | Expl. 1.1 | | | H201 | Explosive; mass explosion hazard |
| | Division 1.2 | Expl. 1.2 | | | H202 | Explosive; severe projection hazard |
| | Division 1.3 | Expl. 1.3 | | | H203 | Explosive; fire, blast or projection hazard |
| | Division 1.4 | Expl. 1.4 | | Warning | H204 | Fire or projection hazard |
| | Division 1.5 | Expl. 1.5 | No Pictogram | Danger | H205 | May mass explode in fire |
| | Division 1.6 | Expl. 1.6 | No Pictogram | - | - | No hazard statement |
| Flammable Gases | Category 1 | Flam. Gas 1 | GHS02 | Danger | H220 | Extremely flammable gas |
| | Category 2 | Flam. Gas 2 | No Pictogram | Warning | H221 | Flammable gas |
| Flammable Aerosols | Category 1 | Flam. Aerosol 1 | GHS02 | Danger | H222 | Extremely flammable aerosol |
| | Category 2 | Flam. Aerosol 2 | | Warning | H223 | Flammable aerosol |
| Oxidising Gases | Category 1 | Ox. Gas 1 | GHS03 | Danger | H270 | May cause or intensify fire; oxidiser |
| Gases under Pressure [1] | Compressed gas | Press. Gas | GHS04 | Warning | H280 | Contains gas under pressure; may explode if heated |
| | Liquefied gas | | | | H281 | Contains refrigerated gas; may cause cryogenic burns or injury. |
| | Refrigerated liquefied gas | | | | H280 | Contains gas under pressure; may explode if heated |
| | Dissolved gas | | | | | |
| [1] = The hazard class "Gases under Pressure" is subdivided into 'Groups' (not 'Categories') | | | | | | |
| Flammable Liquids | Category 1 | Flam. Liq. 1 | GHS02 | Danger | H224 | Extremely flammable liquid and vapour |
| | Category 2 | Flam. Liq. 2 | | | H225 | Highly flammable liquid and vapour |
| | Category 3 | Flam. Liq. 3 | | Warning | H226 | Flammable liquid and vapour |
| Flammable Solids | Category 1 | Flam. Sol. 1 | | Danger | H228 | Flammable solid |
| | Category 2 | Flam. Sol. 2 | | Warning | | |
| Self-reactive substances and mixtures[3] Organic Peroxides[2] | Type A | Self-react. A | GHS01 | Danger | H240 | Heating may cause an explosion |
| | | Org. Perox. A | | | | |
| | Type B | Self-react., B | GHS01 + GHS02 | | H241 | Heating may cause a fire or explosion |
| | | Org. Perox. B | | | | |
| | Type C and D | Self-react. C&D | GHS02 | Danger | H242 | Heating may cause a fire |
| | | Org. Perox. C&D | | Warning | | |
| | Type E and F | Self-react. E&F | | | | |
| | | Org. Perox. E&F | | | | |
| | Type G | Self-react. G | No Pictogram | No Signal word | - | No hazard statement |
| | | Org. Perox. G | | | | |
| [2] = Two separate hazard classes have the same categories (and are therefore grouped). | | | | | | |
| Pyrophoric Liquids | Category 1 | Pyr. Liq. 1 | GHS02 | Danger | H250 | Catches fire spontaneously if exposed to air |
| Pyrophoric Solids | Category 1 | Pyr. Sol. 1 | | | | |
| Self-heating substances and mixtures | Category 1 | Self-heat. 1 | | Danger | H251 | Self-heating; may catch fire |
| | Category 2 | Self-heat. 2 | | Warning | H252 | Self-heating in large quantities; may catch fire |
| Substances or mixtures which in contact with water emit flammable gases | Category 1 | Water-react. 1 | | Danger | H260 | In contact with water releases flammable gases which may ignite spontaneously |
| | Category 2 | Water-react. 2 | | Danger | H261 | In contact with water releases flammable gases |
| | Category 3 | Water-react. 3 | | Warning | | |
| Oxidising Liquids[3] or Solids[3] | Category 1 | Ox. Liq. 1 | GHS03 | Danger | H271 | May cause fire or explosion; strong oxidiser |
| | | Ox. Sol. 1 | | | | |
| | Category 2 | Ox. Liq. 2 | | Danger | H272 | May intensify fire; oxidiser |
| | | Ox. Sol. 2 | | | | |
| | Category 3 | Ox. Liq. 3 | | Warning | | |
| | | Ox. Sol. 3 | | | | |
| [3] = Two separate hazard classes have the same categories (and therefore grouped). | | | | | | |
| Corrosive to metals | Category 1 | Met. Corr. 1 | GHS05 | Warning | H290 | May be corrosive to metals |
| Acute Toxicity | Category 1 | Acute Tox. 1 | GHS06 | Danger | H300 H310 H330 | Fatal if swallowed Fatal in contact with skin Fatal if inhaled |
| | Category 2 | Acute Tox. 2 | | | | |
| | Category 3 | Acute Tox. 3 | | | H301 H311 H331 | Toxic if swallowed Toxic in contact with skin Toxic if inhaled |
| | Category 4 | Acute Tox. 4 | GHS07 | Warning | H302 H312 H332 | Harmful if swallowed Harmful in contact with skin Harmful if inhaled |
| Skin corrosion / irritation | Category 1A | Skin Corr. 1A | GHS05 | Danger | H314 | Causes severe skin burns and eye damage |
| | Category 1B | Skin Corr. 1B | | | | |
| | Category 1C | Skin Corr. 1C | | | | |
| | Category 2 | Skin Irr. 2 | GHS07 | Warning | H315 | Causes skin irritation |

| Classification | | | Labelling | | | |
|---|---|---|---|---|---|---|
| Hazard- Class | Category | Abbreviation of classification (without H set) | Pictogram, code* | Signal -word | Code* | Warning of danger Text |
| Serious eye damage / eye irritation | Category 1 | Eye Dam. 1 | GHS05 | Danger | H318 | Causes serious eye damage |
| | Category 2 | Eye Irr. 2 | GHS07 | Warning | H319 | Causes serious eye irritation |
| Sensitisation of the respiratory tract or the skin | Respiratory Sensitisers Category 1 | Resp. Sens. 1 | GHS08 | Danger | H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled |
| | Skin Sensitisers Category 1 | Skin. Sens. 1 | GHS07 | Warning | H317 | May cause an allergic skin reaction |
| Germ cell mutagenicity | Category 1A | Muta. 1A | GHS08 | Danger | H340 | May cause genetic defects [3] |
| | Category 1B | Muta. 1B | | | | |
| | Category 2 | Muta. 2 | | Warning | H341 | Suspected of causing genetic defects [3] |
| Carcinogenicity | Category 1A | Carc. 1A | | Danger | H350 | May cause cancer [3] |
| | Category 1B | Carc. 1B | | | H350i | May cause cancer when inhaled |
| | Category 2 | Carc. 2 | | Warning | H351 | Suspected of causing cancer [3] |
| [3] = State route of exposure if it is conclusively proven that no other routes of exposure cause the hazard. | | | | | | |
| Reproductive toxicity | Category 1A | Repr. 1A | GHS08 | Danger | H360 [4] | May damage fertility or the unborn child. |
| | | | | | H360F [5] | May damage fertility. |
| | | | | | H360D [5] | May damage the unborn child |
| | Category 1B | Repr. 1B | | | H360FD [5] | May damage fertility. May damage the unborn child. |
| | | | | | H360Fd [5] | May damage fertility. Suspected of damaging the unborn child. |
| | | | | | H360Df [5] | May damage the unborn child. Suspected of damaging fertility. |
| | Category 2 | Repr. 2 | | Warning | H361 [4] | Suspected of damaging fertility or the unborn child. |
| | | | | | H361f [5] | Suspected of damaging fertility. |
| | | | | | H361d [5] | Suspected of damaging the unborn child. |
| | | | | | H361fd [5] | Suspected of damaging fertility. Suspected of damaging the unborn child. |
| | Additional category for effects on or via lactation | Lact. | No Pictogram | No Signal Word | H362 | May cause harm to breast-fed children |
| [4] = (state specific effect if known)(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) [5] F = Fertility, D= Development (lowercase f, d = suspected effect) | | | | | | |
| Specific target organ toxicity (single exposure) | Category 1 | STOT SE 1 | GHS08 | Danger | H370 | Causes damage to organs [6,7] |
| | Category 2 | STOT SE 2 | | Warning | H371 | May cause damage to organs [6,7] |
| | Category 3 | STOT SE 3 | GHS07 | Warning | H335 | May cause respiratory irritation |
| | | | | | H336 | May cause drowsiness or dizziness |
| Specific target organ toxicity (repeated exposure) | Category 1 | STOT RE 1 | GHS08 | Danger | H372 | Causes damage to organs [6] through prolonged or repeated exposure [7] |
| | Category 2 | STOT RE 2 | | Warning | H373 | May cause damage to organs [6] through prolonged or repeated exposure [7] |
| [6] = (state all organs affected, if known) [7] = (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) | | | | | | |
| Aspiration Toxicity | Category 1 | Asp. Tox. 1 | GHS08 | Danger | H304 | May be fatal if swallowed and enters airways |
| Hazardous to the aquatic environment | Acute Category 1 | Aquatic Acute 1 | GHS09 | Warning | H400 | Very toxic to aquatic life |
| | Chronic Category 1 | Aquatic Chronic 1 | | | H410 | Very toxic to aquatic life with long lasting effects |
| | Chronic Category 2 | Aquatic Chronic 2 | | No Signal Word | H411 | Toxic to aquatic life with long lasting effects |
| | Chronic Category 3 | Aquatic Chronic 3 | No Pictogram | No Signal Word | H412 | Harmful to aquatic life with long lasting effects |
| | Chronic Category 4 | Aquatic Chronic 4 | | | H413 | May cause long lasting harmful effects to aquatic life |
| **ADDITIONAL EU HAZARD CLASS** The warning of danger and the signal word included in the section for additional information can be found on the label. | | | | | | |
| Hazardous to the ozone layer | | Ozone | No Pictogram | Danger | EUH059 | Hazardous to the Ozone Layer |

* = The Code for the Pictogram and the H-statement do not need to be included on the label.

**Classification and Labelling** is a set of criteria and rules used to determine if a chemical can cause harm to human health and the environment. It involves the identification and evaluation of the physical properties of a chemical, along with its health and environmental effects and then communicating those hazards via a label.

**The CLP Regulation (EC) No 1272/2008** on classification, labelling and packaging (CLP) of substances and mixtures entered into force on the 20th January 2009 and is direct acting in all European Member States. It has a phased transitional period, firstly for substances and then for mixtures, being the 1st December 2010 and then the 1st June 2015, respectively. These are extended to 1st December 2012 and 1st June 2017 if the substance or mixture is already "on the shelf".

**CLP** introduces the United Nations GHS into Europe and it amends and will eventually replace the existing European Directives 67/548/EEC for substances and Directive 1999/45/EC for preparations. These are transposed in Ireland by Statutory Instruments S.I. No 116 of 2003 (for substances) and S.I. No 62 of 2004 (for preparations), as amended.

**The Competent Authorities** in Ireland for the CLP Regulation are the Health and Safety Authority, for industrial chemicals, and the Pesticides Control Service Division of the Department of Agriculture Fisheries and Food for plant protection products and biocides. There is a CLP Helpdesk established to assist industry to meet there obligation under CLP.

**Further sources of Information**, assistance and guidance can be found at the following:

**HSA website** www.hsa.ie/clp
**CLP Helpdesk** email clp@hsa.ie Telephone 1890 289 389
**ECHA website** http://echa.europa.eu/clp_en.asp

The content of this poster is subject to change as a result of adaptations to technical progess to the CLP Regulation please check the HSA and ECHA websites for updates. The HSA wish to acknowledge and thank the German Competent Authority, BAUA who provided the information on which this poster is based.

# CLP REGULATION

- EU Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging entered into force on 20 January 2009
- It replaces the Dangerous Substances Directive and the Dangerous Preparations Directive
- There is a transitional period 2010 –2015 during which time both classification systems may be used for mixtures
- It is the European implementation of UN Globally Harmonized System (GHS) of classification

# WHY DEVELOP A GLOBALLY HARMONIZED SYSTEM (GHS)?

- Companies around the world are major importers/exporters of chemicals
- Missing, contradictory or incomplete information on chemicals may lead to reduced protections for workers and public.
- Large number of varying requirements around the world create confusion, shipping issues and potential barriers to trade
- A harmonized and consistent approach has benefits both in terms of protection and trade.

# GHS PROJECT: INTERNATIONAL MANDATE

- The goal of establishing a globally harmonized system for hazard communication was established in 1992 at the UN Conference on the Environment and Development - "Rio Earth Summit".
- The Mandate: "A globally harmonized hazard classification and compatible labelling system, including national safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2000."

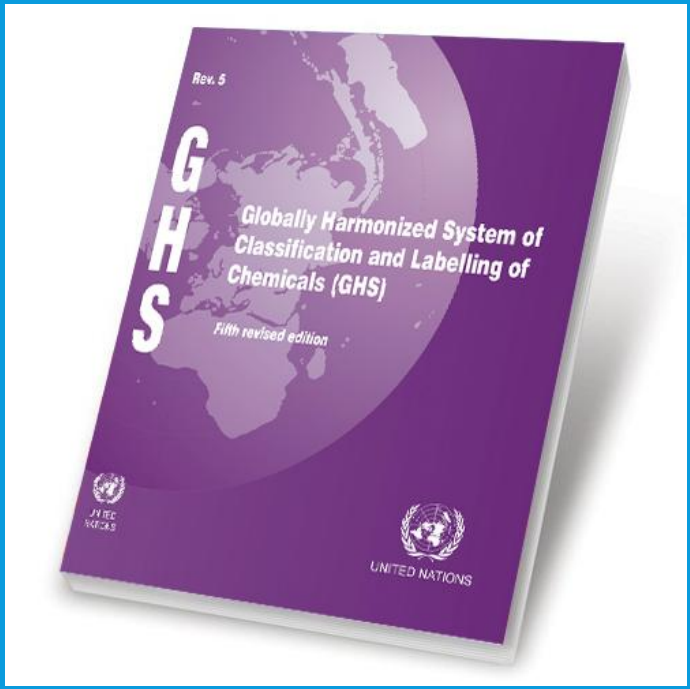
# NEED FOR HARMONIZATION

## EXAMPLE: CAFFINE

LD:50 = 260 mg/kg GHS Acute Toxicity Category 3

| | |
|---|---|
| U.S. , Canada, Japan - | TOXIC |
| Australia, Malaysia, EU - | HARMFUL |
| India - | NON-TOXIC |
| China - | NON-HAZARDOUS |

# U.N. PURPLE BOOK – THE BASIS FOR GHS



# CLP GHS IMPLEMENTATION TIMELINE

- For substances, CLP classification and labeling was required as of December 2010
- For mixtures, CLP classification and labeling was optional as of January 2009: during the transitional phase either may be used
- As of June 2015, CLP labeling will be mandatory on all consumer and workplace products sold in the EU
- A 2-year sell through time will be allowed for products manufactured before June 2015

# OVERVIEW

- Hazard classification: Provides specific criteria for classification of health and physical hazards of substances as well as mixtures.

- Labels: Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.

# BASIC ELEMENTS OF GHS

- Classification Criteria - each substance /mixture needs to be classified for:
  - Health and environmental hazards
  - Physical hazards

- Hazard Communication - apply the results of the classification process to:
  - Labels
  - Safety Data Sheets

# CLASSIFICATION

- "Classification" means to:
  - identify the relevant data regarding the hazards of a chemical
  - review data to ascertain the hazards associated with the chemical
  - decide whether the chemical will be classified as hazardous according to the definition of hazardous chemical
- Hazard classification is a self-classification process – manufactures and importers must classify each chemical/mixture, determine the appropriate hazard class and category based on the evaluation of full range of available data/evidence
- No testing is required

# CLASSIFICATION

- Classifications are based on specific and typically complex procedures outlined in the regulations.
- Data is gathered on the substance/mixture and compared to the criteria on the standard
- The resulting classification is used to determine the proper labeling requirements

# HEALTH/ENVIRONMENTAL HAZARD CATEGORIES

Acute Toxicity

Skin Corrosion/Irritation

Serious Eye Damage/Eye Irritation

Respiratory or Skin Sensitization

Germ Cell Mutagenicity

Carcinogenicity

Reproductive Toxicity

Target Organ Systemic Toxicity – Single and Repeated Dose

Aspiration Toxicity

Hazardous to the Aquatic Environment

# PHYSICAL HAZARDS

Explosive

Flammability – gases, aerosols, liquids, solids

Oxidizer – liquid, solid, gases

Self-Reactive

Pyrophoric – liquids, solids

Self-Heating

Organic Peroxides

Corrosive to Metals

Gases Under Pressure

Water-Activated Flammable Gases

# CLP REQUIRED LABEL ELEMENTS

- Product identifier
- Hazard pictograms
- Signal words (Warning or Danger)
- Hazard statements
- Precautionary information
- Supplier identifier (name, address, phone)
- Net contents
- Supplemental information is **optional**

# Pictograms

HEALTH HAZARD

GAS CYLINDER

FLAME OVER CIRCLE

FLAME

CORROSION

ENVIRONMENT

EXCLAMATION MARK

EXPLODING BOMB

SKULL & CROSSBONES

# HAZARD PICTOGRAMS

Physical

Health

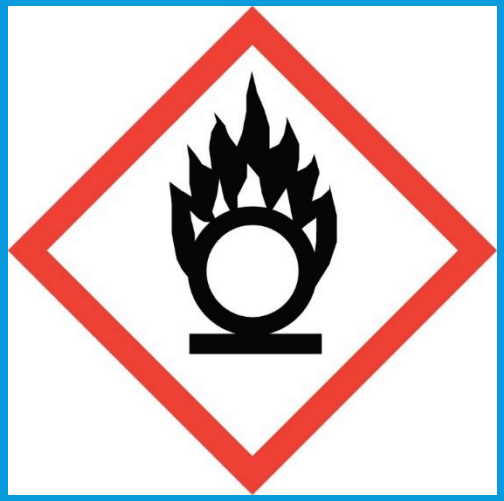
Environment

- Acute Toxicity (fatal or toxic)

- Acute toxicity (harmful)
- Eye or skin irritant
- Skin sensitizer
- Respiratory tract irritant
- Narcotic effects
- Hazardous to the ozone layer

- Corrosive to skin
- Eye damage
- Corrosive to metals

- Flammable
- Pyrophoric
- Self-heating
- Emits flammable gas
- Self-reactive
- Organic peroxide



- Oxidizer

- Gases under pressure

- Explosive
- Self-reactive
- Organic peroxide

- Carcinogen
- Mutagen
- Reproductive toxicity
- Respiratory sensitizer
- Target organ toxicity
- Aspiration toxicity

- Aquatic Toxicity

# Categories of Acute Oral Toxicity

| Category 1 | Category 2 | Category 3 | Category 4 |
|---|---|---|---|
| $LD_{50}$ < 5 mg/kg | $LD_{50}$ > 5 to ≤ 50 mg/kg | $LD_{50}$ > 50 to ≤ 300 mg/kg | $LD_{50}$ > 300 to ≤ 2000 mg/kg |
|  |  |  |  |
| DANGER<br><br>H300<br>Fatal if swallowed | DANGER<br><br>H300<br>Fatal if swallowed | DANGER<br><br>H301<br>Toxic if swallowed | WARNING<br><br>H302<br>Harmful if swallowed |

# HAZARD CLASSES AND CATEGORIES

| | | | | | | |
|---|---|---|---|---|---|---|
| Acute Toxicity | Category 1 | Acute Tox. 1 |  GHS06 | Danger | H300<br>H310<br>H330 | Fatal if swallowed<br>Fatal in contact with skin<br>Fatal if inhaled |
| | Category 2 | Acute Tox. 2 | | | | |
| | Category 3 | Acute Tox. 3 | | | H301<br>H311<br>H331 | Toxic if swallowed<br>Toxic in contact with skin<br>Toxic if inhaled |
| | Category 4 | Acute Tox. 4 |  GHS07 | Warning | H302<br>H312<br>H332 | Harmful if swallowed<br>Harmful in contact with skin<br>Harmful if inhaled |
| Hazardous to the aquatic environment | Acute Category 1 | Aquatic Acute 1 |  GHS09 | Warning | H400 | Very toxic to aquatic life |
| | Chronic Category 1 | Aquatic Chronic 1 | | | H410 | Very toxic to aquatic life with long lasting effects |
| | Chronic Category 2 | Aquatic Chronic 2 | | No Signal Word | H411 | Toxic to aquatic life with long lasting effects |
| | Chronic Category 3 | Aquatic Chronic 3 | No Pictogram | No Signal Word | H412 | Harmful to aquatic life with long lasting effects |
| | Chronic Category 4 | Aquatic Chronic 4 | | | H413 | May cause long lasting harmful effects to aquatic life |

# HAZARD COMMUNICATION


**Sodium hydroxide, 4 % NaOH**

1 mol/L NaOH, CAS no. 1310-73-2

Danger

Causes severe skin burns and eye damage.

Wear protective gloves/protective clothing/eye protection/face protection. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Immediately call a POISON CENTER/ doctor/....

Company's name , adress and telephone number:

(Made by, date)

Product identifier
Concentration in %

Hazard pictogram

Signal word

Hazard statement

Precautionary statements

Company's identity

Supplemental labelling information

# PRODUCT IDENTIFIER

- Name and identification number given in the Annex VI CLP

if not included in Annex VI :→C&L Inventory

- CAS number and IUPAC name

# SIGNAL WORDS AND HAZARD STATEMENTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Acute Toxicity | Category 1 | Acute Tox. 1 |  GHS06 | Danger | H300<br>H310<br>H330 | Fatal if swallowed<br>Fatal in contact with skin<br>Fatal if inhaled |
| | Category 2 | Acute Tox. 2 | | | | |
| | Category 3 | Acute Tox. 3 | | | H301<br>H311<br>H331 | Toxic if swallowed<br>Toxic in contact with skin<br>Toxic if inhaled |
| | Category 4 | Acute Tox. 4 |  GHS07 | Warning | H302<br>H312<br>H332 | Harmful if swallowed<br>Harmful in contact with skin<br>Harmful if inhaled |
| Hazardous to the aquatic environment | Acute Category 1 | Aquatic Acute 1 |  GHS09 | Warning | H400 | Very toxic to aquatic life |
| | Chronic Category 1 | Aquatic Chronic 1 | | | H410 | Very toxic to aquatic life with long lasting effects |
| | Chronic Category 2 | Aquatic Chronic 2 | | No Signal Word | H411 | Toxic to aquatic life with long lasting effects |
| | Chronic Category 3 | Aquatic Chronic 3 | No Pictogram | No Signal Word | H412 | Harmful to aquatic life with long lasting effects |
| | Chronic Category 4 | Aquatic Chronic 4 | | | H413 | May cause long lasting harmful effects to aquatic life |

# GROUPS OF HAZARD AND PRECAUTIONARY STATEMENTS

| Code | hazard statements | Code | precautionary statements |
|---|---|---|---|
| H200-H299 | Physical | P100-P199 | General |
| H300-H399 | Health | P200-P299 | Prevention |
| H400-H499 | Environment | P300-P399 | Response |
| | | P400-P499 | Storage |
| | | P500-P599 | Disposal |
| EUH | only in the EU | | |

# EXERCISES - CLP

1. Label for 3 % NaOH in 1 L bottle
2. Label for 15 % HCl in 1 L bottle

Danger

Causes severe skin burns and eye damage

Wear eye protection.

**Hydrochloric acid,**
**15 % HCl**

Warning

Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.

Wear eye protection. Avoid breathing gas. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice / attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. Call a POISON CENTER or doctor/ physician if you feel unwell.

Company's name , adress and telephone number:
(Made by, date)

**Hydrochloric acid,**
**15 % HCl**

Warning

Company's name , adress and telephone number:
(Made by, date)

# CONCENTRATION LIMITS

- Generic concentration limits

*Table 3.2.3*

**Generic concentration limits of ingredients classified for skin corrosive/irritant hazard (Category 1 or 2) that trigger classification of the mixture as corrosive/irritant to skin**

| Sum of ingredients classified as: | Concentration triggering classification of a mixture as: | |
|---|---|---|
| | Skin Corrosive | Skin Irritant |
| | Category 1 (see note below) | Category 2 |
| Skin Corrosive Categories 1A, 1B, 1C | ≥ 5 % | ≥ 1 % but < 5 % |
| Skin irritant Category 2 | | ≥ 10 % |
| (10 × Skin Corrosive Category 1A, 1B, 1C) + Skin irritant Category 2 | | ≥ 10 % |

# CLASSIFICATION FOR ACUTE OR CHRONIC AQUATIC HAZARD

## $L(E)C_{50}$ from SDS

SECTION 1: Identification of the substance and of the company/undertaking
1.1. Product identifier
Product name Ammonia

SECTION 12: Ecological information
12.1. Toxicity
Acute aquatic, fish: Value: 0,89 mg/l, Method of testing: LC50 (Not ionized freshwater), Duration: 96h
Acute aquatic, Daphnia: Value: 101 mg/m³, Method of testing: LC50 (Freshwater), Duration: 96 h

# M - FACTOR

*Table 4.1.3*

**Multiplying factors for highly toxic components of mixtures**

| $L(E)C_{50}$ value | Multiplying factor (M) |
|---|---|
| $0{,}1 < L(E)\ C_{50} \leq 1$ | 1 |
| $0{,}01 < L(E)\ C_{50} \leq 0{,}1$ | 10 |
| $0{,}001 < L(E)\ C_{50} \leq 0{,}01$ | 100 |
| $0{,}0001 < L(E)\ C_{50} \leq 0{,}001$ | 1 000 |
| $0{,}00001 < L(E)\ C_{50} \leq 0{,}0001$ | 10 000 |
| (continue in factor 10 intervals) | |

# M - FACTOR

*Table 4.1.1*

**Classification of a mixture for acute hazards, based on summation of classified components**

| Sum of components classified as: | Mixture is classified as: |
|---|---|
| Acute Category 1 × M [a] ≥ 25 % | Acute Category 1 |

[a] For explanation of the M-factor, see 4.1.3.5.5.5.

*Table 4.1.2*

**Classification of a mixture for chronic (long term) hazards, based on summation of classified components**

| Sum of components classified as: | Mixture is classified as: |
|---|---|
| Chronic Category 1 × M [a] ≥ 25 % | Chronic Category 1 |
| (M × 10 × Chronic Category 1) + Chronic Category 2 ≥ 25 % | Chronic Category 2 |
| (M × 100 × Chronic Category 1) + (10 × Chronic Category 2) + Chronic Category 3 ≥ 25 % | Chronic Category 3 |
| Chronic Category 1 + Chronic Category 2 + Chronic Category 3 + Chronic Category 4 ≥ 25 % | Chronic Category 4 |

[a] For explanation of the M-factor, see 4.1.3.5.5.5.

# EXERCISES - CLP

3. Label for 9 % $NH_3$ in 1L bottle

Danger

Causes severe skin burns and eye damage. May cause respiratory irritation.

Wear eye protection. Avoid breathing gas.

# ACUTE TOXICITY

Table 3.1.2

**Conversion from experimentally obtained acute toxicity range values (or acute toxicity hazard categories) to acute toxicity point estimates for classification for the respective routes of exposure**

| Exposure routes | Classification Category or experimentally obtained acute toxicity range estimate | Converted acute toxicity point estimate (see Note 1) |
|---|---|---|
| Oral (mg/kg bodyweight) | 0 < Category 1 ≤ 5<br>5 < Category 2 ≤ 50<br>50 < Category 3 ≤ 300<br>300 < Category 4 ≤ 2 000 | 0,5<br>5<br>100<br>500 |
| Dermal (mg/kg bodyweight) | 0 < Category 1 ≤ 50<br>50 < Category 2 ≤ 200<br>200 < Category 3 ≤ 1 000<br>1 000 < Category 4 ≤ 2 000 | |
| Gases (ppmV) | 0 < Category 1 ≤ 100<br>100 < Category 2 ≤ 500<br>500 < Category 3 ≤ 2 500<br>2 500 < Category 4 ≤ 20 000 | |
| Vapours (mg/l) | 0 < Category 1 ≤ 0,5<br>0,5 < Category 2 ≤ 2,0<br>2,0 < Category 3 ≤ 10,0<br>10,0 < Category 4 ≤ 20,0 | |
| Dust/mist (mg/l) | 0< Category 1 ≤ 0,05<br>0,05 < Category 2 ≤ 0,5<br>0,5 < Category 3 ≤ 1,0<br>1,0 < Category 4 ≤ 5,0 | |

5 % solution of a substance classified as acute tox. 3

Table 3.1.1

**Acute toxicity hazard categories and acute toxicity estimates (ATE) defining the respective categories**

| Exposure Route | Category 1 | Category 2 | Category 3 | Category 4 |
|---|---|---|---|---|
| Oral (mg/kg bodyweight)<br>See Note (a) | ATE ≤ 5 | 5 < ATE ≤ 50 | 50 < ATE ≤ 300 | 300 < ATE ≤ 2 000 |
| Dermal (mg/kg bodyweight)<br>See Note (a) | ATE ≤ 50 | 50 < ATE ≤ 200 | 200 < ATE ≤ 1 000 | 1 000 < ATE ≤ 2 000 |
| Gases (ppmV) (1)<br>see: Note (a)<br>Note (b) | ATE ≤ 100 | 100 < ATE ≤ 500 | 500 < ATE ≤ 2 500 | 2 500 < ATE ≤ 20 000 |
| Vapours (mg/l)<br>see: Note (a)<br>Note (b)<br>Note (c) | ATE ≤ 0,5 | 0,5 < ATE ≤ 2,0 | 2,0 < ATE ≤ 10,0 | 10,0 < ATE ≤ 20,0 |
| Dusts and Mists (mg/l)<br>see: Note (a)<br>Note (b) | ATE ≤ 0,05 | 0,05 < ATE ≤ 0,5 | 0,5 < ATE ≤ 1,0 | 1,0 < ATE ≤ 5,0 |

(1) Gas concentrations are expressed in parts per million per volume (ppmV).

# EXERCISES - CLP

4. Label for 2 % $CuSO_4$

Toxic to aquatic life with long lasting effects.

Avoid release to the environment. Collect spillage.

Company's name , adress and telephone number:
(Made by, date)

| Hazard class | To determine the classification of the mixture | Concentration limit for the mixture to be classified as hazardous |
|---|---|---|
| Acute Tox. 4;H302 | | 25 % |
| Skin irrit. 2;H315 | Specific concentration limit C ≥ 20 % | 20 % |
| Skin Sens. 1;H317 | Specific concentration limit C ≥ 0,01 % | 0,01 % |
| Acute Tox. 4;H332 | | 0,075 % |
| Resp. Sens. 1;H334 | Generic concentration limit C ≥ 1,0 % - table 3.4.3 in the CLP regulation | 1 % |
| Muta. 2;H341 | Generic concentration limit C ≥ 1,0 % - table 3.5.2 in the CLP regulation | 1 % |
| Carc. 1A;H350i | Generic concentration limit C ≥ 0,1 % - table 3.6.2 in the CLP regulation | 0,1 % |
| Repr. 1B;H360D | Generisk konsentrasjonsgrense C ≥ 0,3 % - table 3.7.2 in the CLP regulation | 0,3 % |
| STOT RE 1;H372 | Specific concentration limit C ≥ 1 % | 1 % |
| STOT RE 2;H373 | Specific concentration limit 0,1 % ≤ C ≤ 1% | 0,1 % |
| Aquatic Acute 1 | < 25 % · 1(M) < 25 % | 25 % |
| Aquatic Chronic 1 | < 0,25 % · 1 (M) · 100 < 25 % | 0,25 % |