GHS Awareness

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Foundations

What the….!

What is the GHS?

- Globally Harmonised System of Classifying and Labelling of Chemicals:
  - Comprehensive tool that harmonises chemical classification and hazard communication.

- Harmonised criteria for classification – physical, health and environmental
  - Applies criteria to classify chemicals based on **intrinsic** hazards
  - Covers single substances, solutions and mixtures.

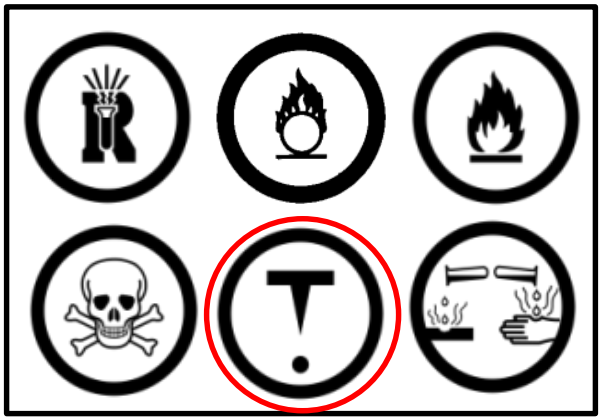
- Communicates hazard information of hazardous chemicals on labelling and safety data sheets (SDS).
  - Hazard classes
  - Symbols, signal words and hazard and precautionary phrases
  - Standardised Safety Data Sheet format.

- Focus is on manufacturers and importers who have the primary duty to classify and ensure correctly labelled and SDS reflects GHS information before 2017.
- Some changes to systems are required for end users.
  - Business impact…..Training for staff to understand GHS

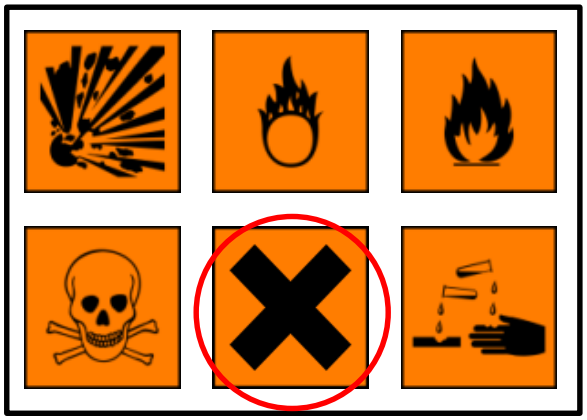
Why was the GHS developed?

- Hazard symbols / pictograms

What do all these symbols mean?



WHMIS (Canada)



European Union

ADG Code

- The ADG Code has no symbol for chronic/severe health effects.
- Hazardous substance requirements have no pictograms
- The GHS standardises these symbols on labels/SDS

Why was the GHS developed?

Example…..Labelling inconsistencies

The GHS and the WHS Regulations

Scope and Application

- Classification by the manufacturer / importer.
- Previously, classification existed under two systems

Hazardous substances	Dangerous Goods
NOHSC Approved Criteria	Physical / Health; Env./Bio./Radio.
HEALTH RELATED & NO PICTOGRAMS	ADG Code

The GHS and the WHS Regulations

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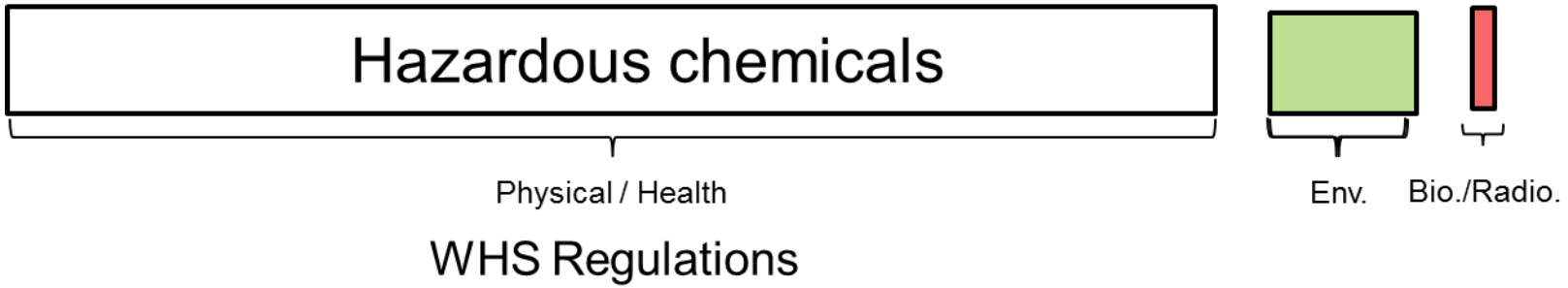


- Hazardous chemical is a new term introduced by the WHS legislation.
- These definitions have been merged under the term "hazardous chemicals"

The GHS – Scope and Application

How does it work?

A chemical is classified against the criteria of each hazard class and category under:

- Physical hazards
- Health hazards
- Environmental hazards (not mandatory)

If it meets the criteria of the GHS in one or more class, it is a hazardous chemical.

- Some low level hazard classes are excluded by the WHS Regulations
- Hazardous chemicals include a single substance, mixture or article.

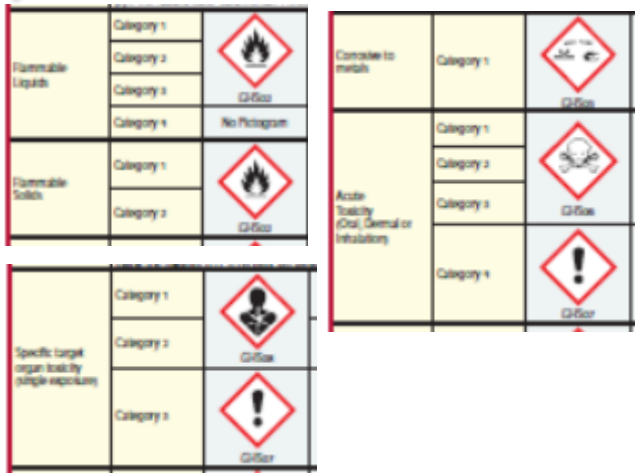
Each hazard class is split into:

- Divisions (explosives only)
- Categories
- Types (applies to organic peroxides and self-reacting substances).

Process for manufacturers/importers (primary duty-holders)

Classify according to GHS criteria

Establish the hazard class and categories



1. Generate GHS-based SDS

Include dangerous goods class in Section 14 where applicable

2. Generate GHS based label for container

Provided to end-users for hazard communication

This process dictates the signal word, hazard statements, precautionary statements & pictograms

The GHS – How is content of SDS & labels generated?

Hazards information is prescribed according to hazard classes and categories identified by manufactuer/importer:

- Symbols (pictograms)
- Signal words
- Hazard statements, and
- Precautionary statements.

Flammable Liquids	Category 1	 GHS02	Danger	H224	Extremely flammable liquid and vapour
	Category 2			H225	Highly flammable liquid and vapour
	Category 3		Warning	H226	Flammable liquid and vapour
	Category 4	No Pictogram	Warning	H227	Combustible liquid

These elements are then put onto:

- Labels
- Safety data sheets

Diesel GHS classification

Ref: Shell Diesel SDS Issue 13/6/2013

Classification [1]	Flammable Liquid Category 4, Carcinogenicity Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects), Aspiration Hazard Category 1, Acute Aquatic Hazard Category 2, Chronic Aquatic Hazard Category 2
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI*

Label elements

GHS label elements	
SIGNAL WORD	**DANGER**

Hazard statement(s)

H227	Combustible liquid
H351	Suspected of causing cancer.
H336	May cause drowsiness or dizziness.
H304	May be fatal if swallowed and enters airways.
H411	Toxic to aquatic life with long lasting effects.
AUH066	Repeated exposure may cause skin dryness and cracking

Combustibility hazard now more prominent

First Aid measures

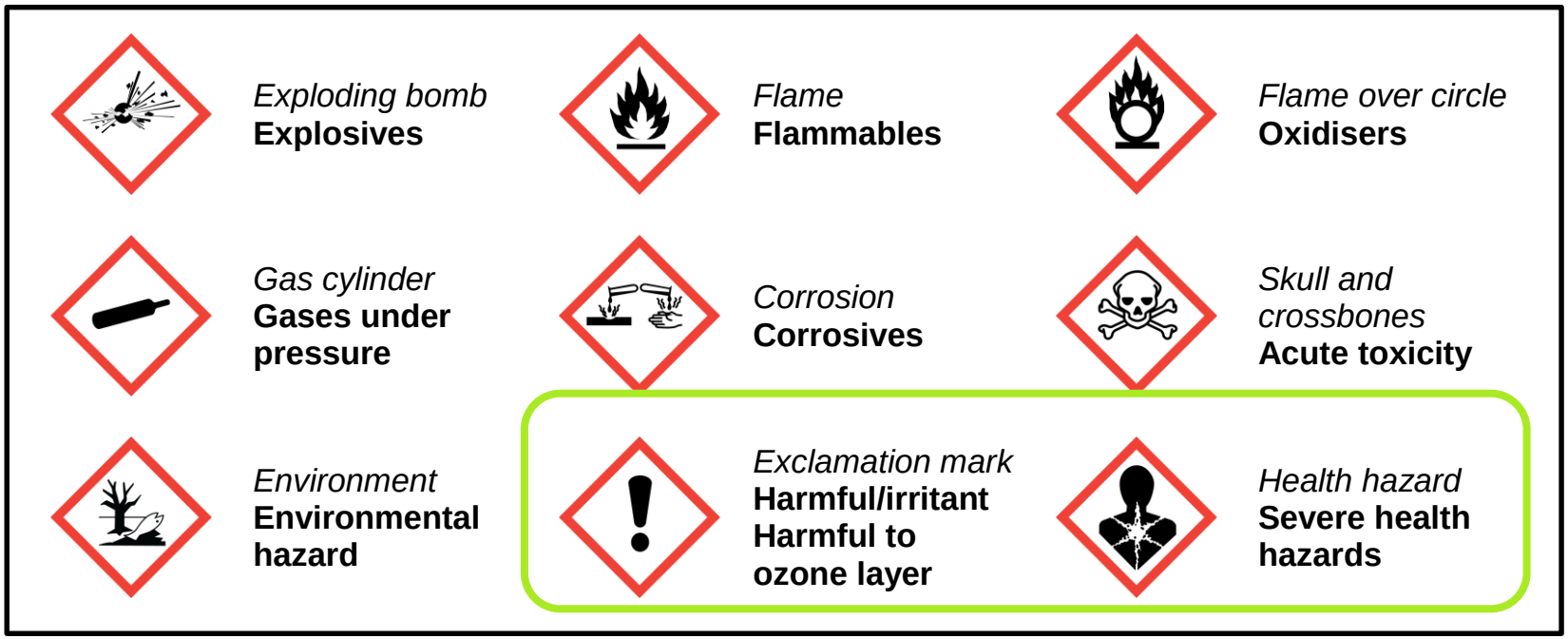
Indication of any immediate medical attention and special treatment needed

For acute or short term repeated exposures to petroleum distillates or related hydrocarbons:

- Primary threat to life, from pure petroleum distillate ingestion and/or inhalation, is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen.

The GHS – Pictograms

The GHS prescribes 9 pictograms to convey the hazards of chemicals



- Two new symbols are introduced for health hazards
- Where several hazards exist and criteria for multiple GHS hazard categories are met, multiple pictograms applicable [12]
- Appear on label (according to the prioritisation rules)

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A new pictogram- health hazard information

GHS Pictogram represents chronic health hazards:

- germ cell mutagenicity
- carcinogenicity
- reproductive toxicity
- target organ systemic toxicity
- aspiration hazard

GHS hazard communication

A pictogram on its own- not so helpful.
However, when combined with signal words and hazard statements, and precautionary statements- aims to provide improved hazard communication:

➡ principle of labelling.

FLAMMABLE LIQUIDS

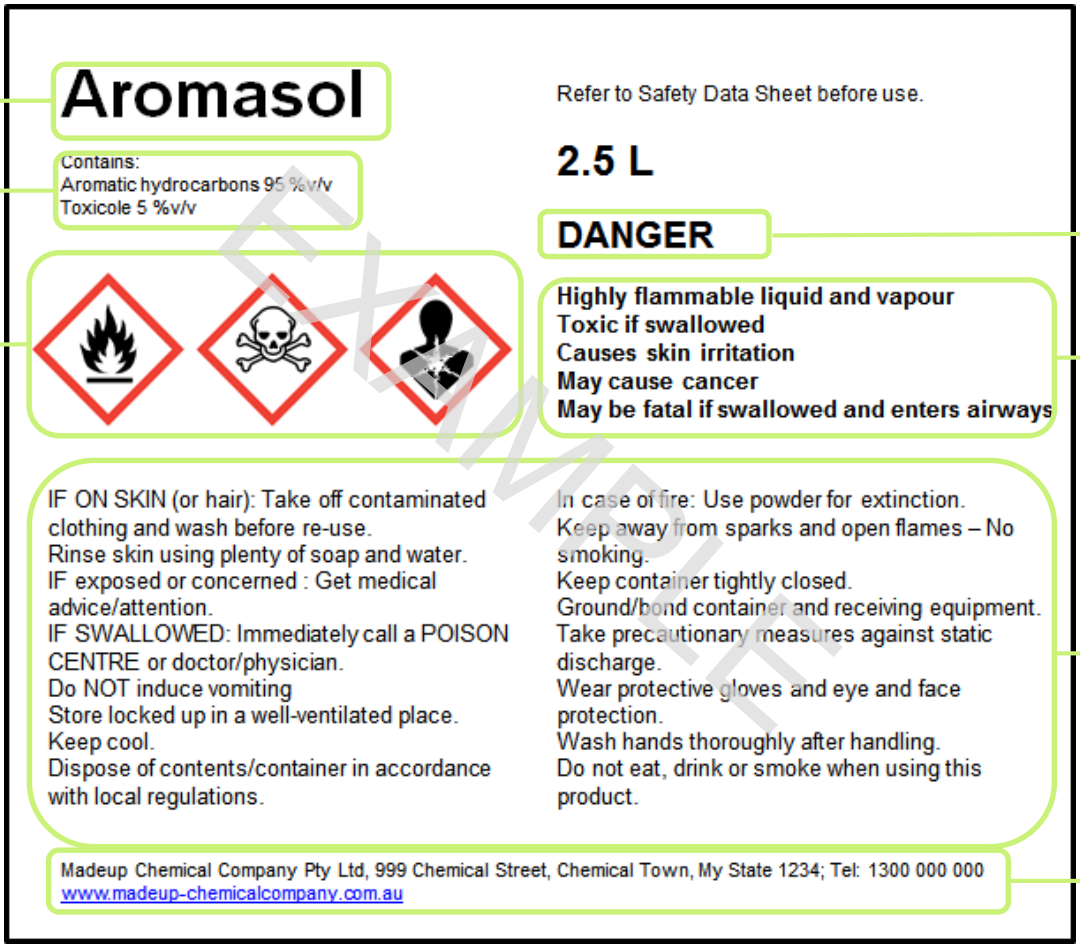
Hazard category	Signal word	Hazard statement
1	Danger	H224 **Extremely flammable liquid and vapour**
2	Danger	H225 **Highly flammable liquid and vapour**
3	Warning	H226 **Flammable liquid and vapour**

Symbol
Flame

And may have others

Precautionary statements			
Prevention	**Response**	**Storage**	**Disposal**
P210 **Keep away from heat/sparks/open flames/hot surfaces.** Manufacturer/supplier or the competent authority to specify applicable ignition source(s). P233 **Keep container tightly closed.** P240 **Ground/Bond container and receiving equipment** *... if electrostatically sensitive*	P303 + P361 + P353 **IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.** P370 + P378 **In case of fire: Use ... for extinction.** ...Manufacturer/sup	P403 + P235 **Store in a well-ventilated place. Keep cool.**	P501 **Dispose of contents/container to...** … in accordance with local/regional/national/international Regulations (to be specified).

Examples of GHS labels



ARTICLE 84077895

Folicur®

SC430 FUNGICIDE

FILE COPY

ACTIVE INGREDIENT:
430 g/L TEBUCONAZOLE

FOR EXPORT ONLY
FOR MANUFACTURING USE ONLY

LABAS 84113247A

1000 L

FOLICUR® SC430 FUNGICIDE

Hazard and Toxicity information: refer Safety Data Sheet.
Storage: Store in a dry, cool, secure, well-ventilated area out of direct sunlight.
Spillage: Clean up immediately. Refer Safety Data Sheet.
Fire Fighting Measures: In Australia: HAZCHEM Code not applicable.
Safety and First Aid:
Refer Safety Data Sheet
In Australia: POISONS INFORMATION CENTRE tele: 13 11 26

In case of EMERGENCY telephone (24hr)
*** within Australia: 1800 033 111**
*** Global Incident Response Hotline:**
+1 (760) 476-3964 (Company 3E for Bayer CropScience)

Batch No: refer details on container
Date of Manufacture: refer details on contain

Folicur® is a Registered Trademark of the Bayer Group

Manufacturer:
Bayer CropScience Pty Ltd
261 Tingira Street
Pinkenba, QLD, 4008, Australia
Telephone +61 (7) 3860 3800

Who will this impact and how?

Manufacturers/importers of hazardous chemicals having to adjust labels and SDS by 31 December 2016 which is the end of a 5 year transition period.

Will effect end-users (i.e. workplaces) as new GHS labels and SDS appear

Implications for workplaces

As an end-user

- new labels on containers
- Revised SDS
- training and awareness for workers
- materials available to assist via Safe Work Australia
  - Poster, fact sheets “understanding labels”
  - Power point presentation on their web site
  - FAQs
  - NSW 3 min video + Comcare 11 min Video to be released soon

Hazard communication

- Container/package Labels [r335, 341-343]
  - Identify's the product
  - Convey's the hazard information directly to user
- Primary source is the SDS [r330]
  - Needs to be reviewed before product on site to ensure workplace can manage the risks
  - Important part of procurement for hazchems
  - Foundation for hazard identification and risk assessment

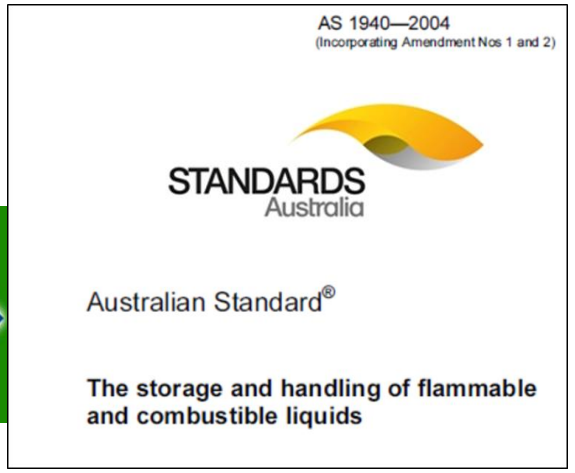
Additional points to consider

- GHS is the focus for workplace chemicals, i.e. used in the workplace
- Consumer goods (retail products aimed for home use) are exempt from GHS when complying with SUSMP (Standard for the Uniform Scheduling of Medicines and Poisons) under the Health Regulation & use consistent with home use.
  - A decision for manufacturer/importer
- Code of Practice provides for several specific circumstances such as labels for small containers and ‘dual use’ (i.e. workplace and home use), research chemicals and samples, decanted/transferred, waste, and known hazards
  - Less onerous, typically at least the product identifier and a hazard statement or pictogram

Implementation challenges

Consider the context….

STANDARD FOR THE
UNIFORM SCHEDULING OF
MEDICINES AND POISONS



GHS

OF AUSTRALIA
SC
ission

(2004)]

Edition

October 2004

NICNAS

rnational Agency for Research on Cancer

World Health
Organization

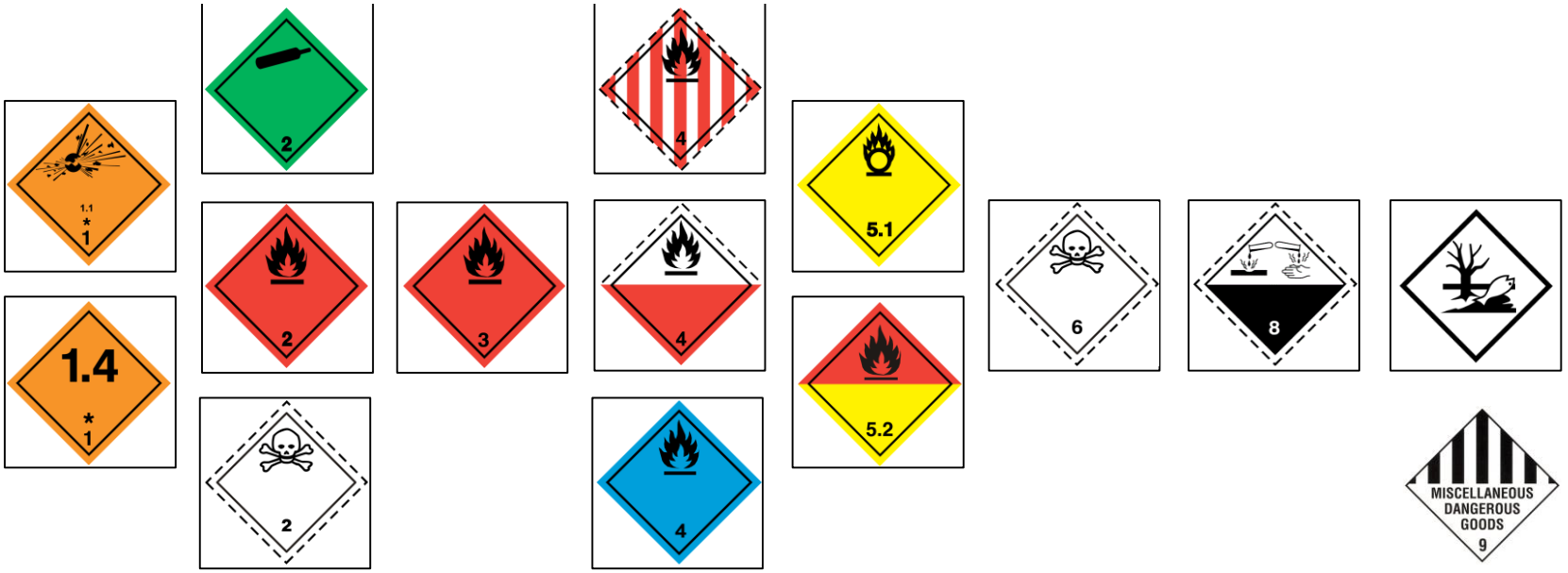
Challenges from classification

- Yes- Diesel is still a “combustible”…GHS introduced confusion re flammable liquid Category 4 where FP 60-93^{o}C.
- Strict approach to classification based on inherent hazards…
- But (in case of dangerous goods) historically relying on a classification system for transport purposes, i.e. ADG Code where variation has been introduced over the years to account for numerous factors such as volume, type of package, mode of transport etc. These no longer available/adopted for GHS.
- Eg. Class 9
- Class 3…viscous property influences, or 2.3.1.3 FP $\leq$35^{o}C which do not sustain combustion
- Various ‘not subject to code’ provisions
- rules around packing groups
- toxicity criteria, vapour pressure considerations ADG

Challenges from implementation

E.g. Are dangerous goods diamonds gone?

- In short….No. Coloured diamonds still retained for transport requirements (ADG Code) and for placarding of storage areas and manifest information….support emergency services.



1 2 3 4 5 6 8 9

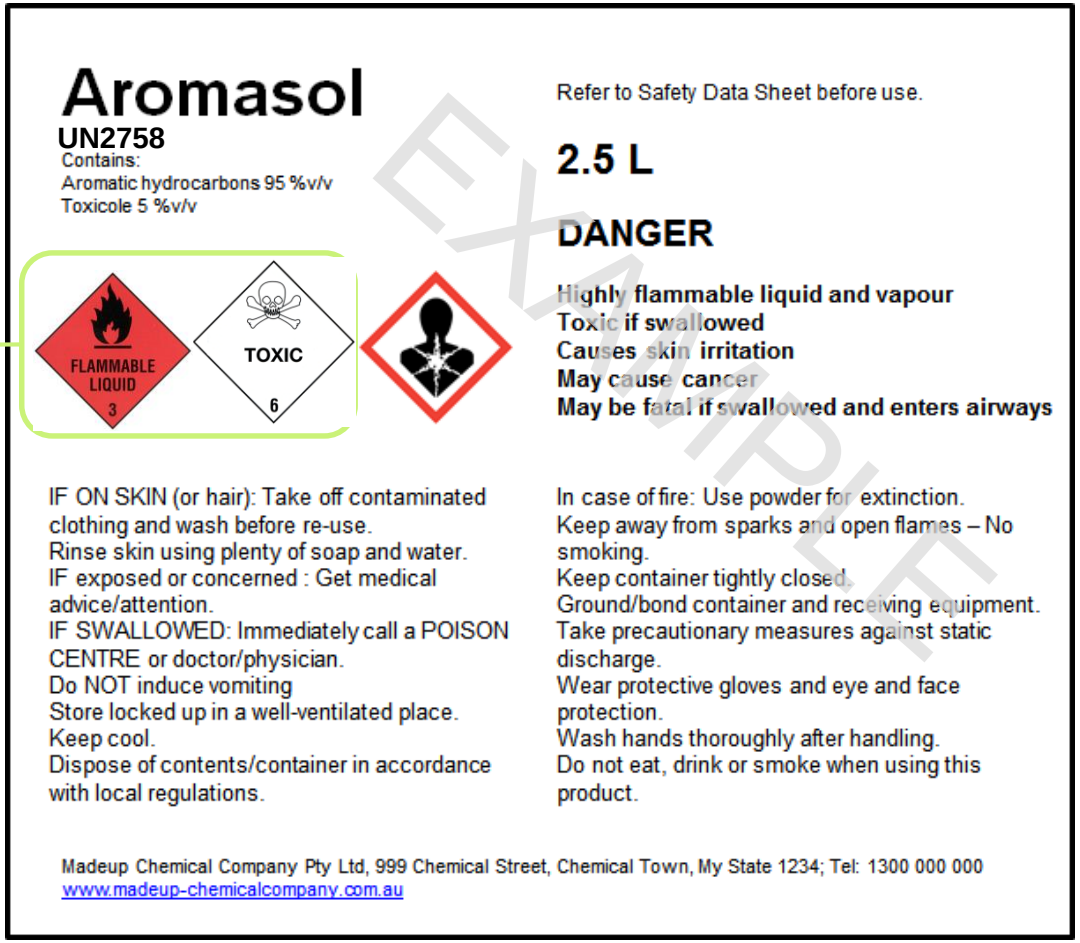
Dangerous Goods Class

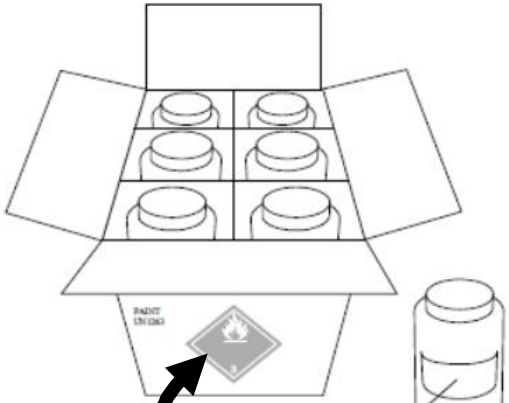
- GHS allows dangerous goods class labels to be displayed on labelling and safety data sheets where equivalent to GHS pictograms.
- There are no DG equivalents to the “exclamation mark” and “health hazard” pictograms.

Examples of GHS labels

Label suitable for transport

DG Class Labels





PAINT (FLAMMALINE, LEAD CHROMOMIUM)

Product identifier

(see 1.4.10.5.2 (d))

SIGNAL WORD (see 1.4.10.5.2 (a))

Hazard statements (see 1.4.10.5.2 (b))

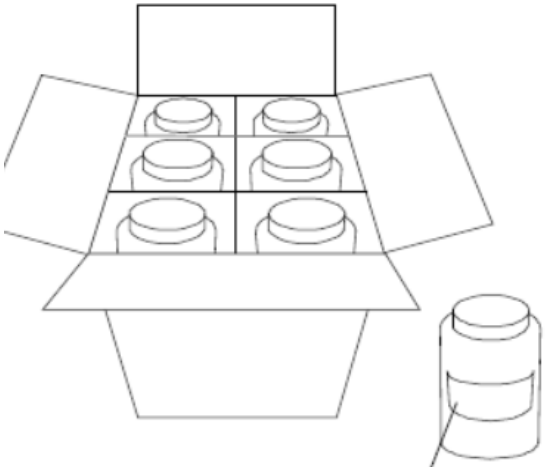
Precautionary statements (see 1.4.10.5.2 (c))

Additional information as required by the competent authority as appropriate.

Supplier identification (see 1.4.10.5.2 (e))

Dangerous goods under ADG Code requiring flammable diamond on the box for transport.

Container also has health info for the worker



Product not a dangerous goods- no transport requirements.

But an irritant, so health info on label for worker

BLAHZENE SOLUTION

Product identifier

(see 1.4.10.5.2 (d))

SIGNAL WORD (see 1.4.10.5.2 (a))

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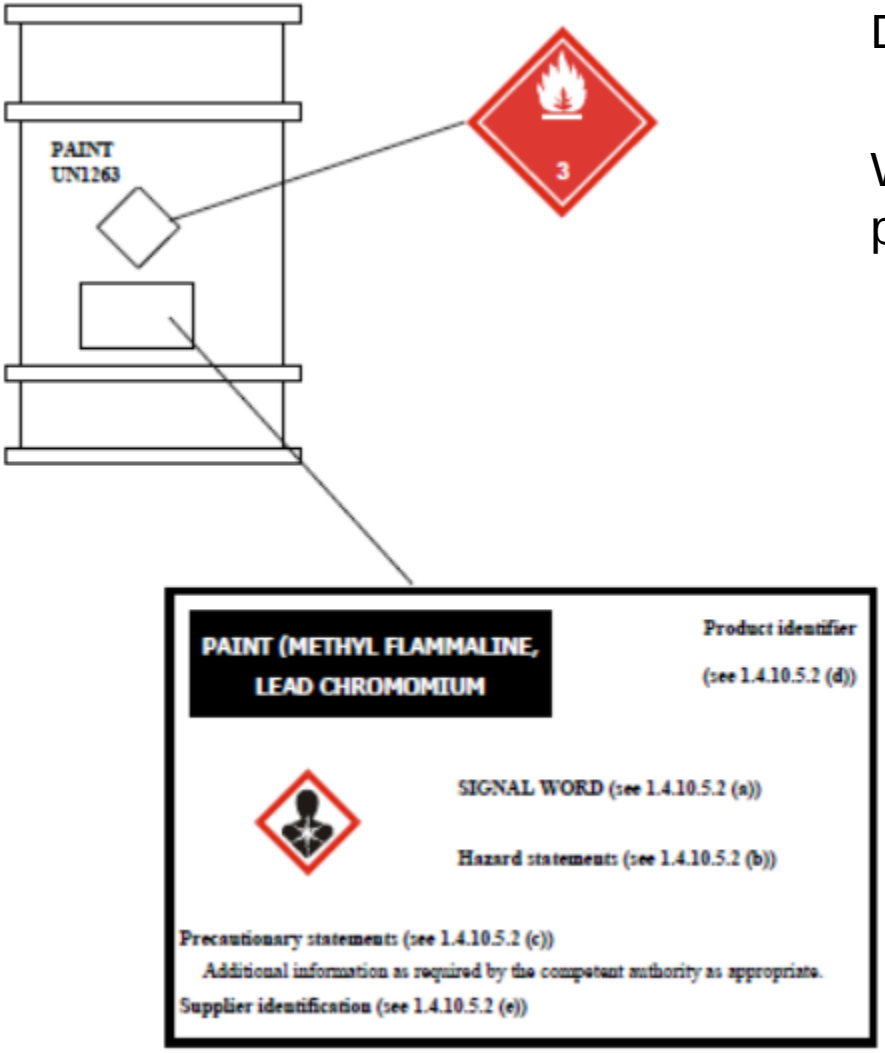

Drums- single packaging

Will see dangerous goods class labels plus additional GHS information

Labelling packages- GHS impact

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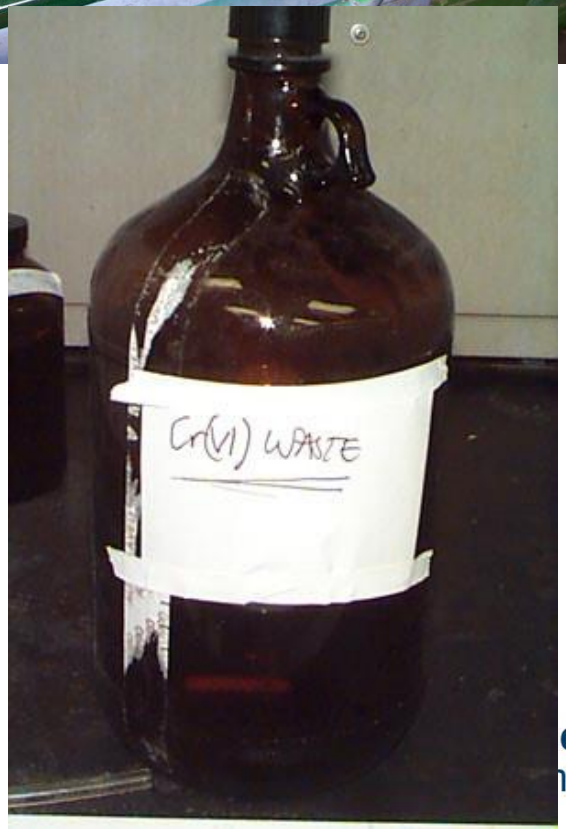
Labelling packages

The not so good…

Never to be in food/drink containers

Label rules in place to ensure people have access to the required safety information



Placarding of storage areas and bulk containers:

Continue to refer to ADG Code for form and dimensions (not GHS pictograms).

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Placarding of storage areas and bulk containers:

Continue to refer to ADG Code for form and dimensions (not GHS pictograms).

A not-so-good example of placarding

Challenges from implementation

- Achieving the deadline
- Accuracy in undertaking the classification process
  - Potential for variation in categories thus SDS via different sources
- Rise in awareness of requirements leading to reviews/increased vigilance re label and SDS content…complaints
- Realisation that containers were probably never compliant- not a GHS issue!
- Taking an all-chemicals approach, beyond intent of regulation
- Stock in-place post-2016?
  - Manufacturers/importers/suppliers vs end-users & practicalities

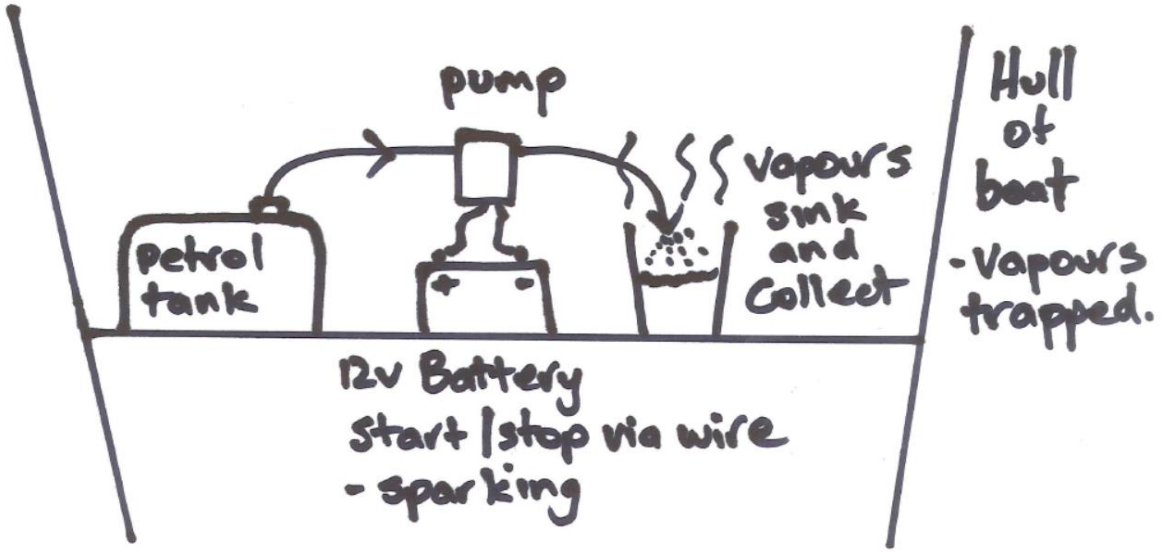
Value of Safety Data Sheets

An example: young worker decanting fuel from small fuel tank while standing on the deck within in a small boat located in a workshop to do repairs. Used a small pump to transfer petrol into 2 open pails & operated by touching exposed wire to 12V battery terminals, spills had occurred…..END RESULT – an ignition and burns to the worker

- Reviewing the SDS
- Section 2 Hazard Identification
  - Extremely flammable
  - Keep away from ignition sources- no smoking
- Section 6 Accidental release measures
  - Small spill- eliminate all ignition sources. Move containers from spill area. Absorb with an inert material…use spark-proof tools and explosion proof equipment.

- Section 7: Handling and storage
  - Use only with adequate ventilation. Keep away from sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Use explosion-proof electrical equipment.
- Section 9 Physical and chemical properties
  - Flash point -43^{o}C
  - Flammable range 1.4% to 7.6%
  - Vapour pressure- high i.e. evapourates readily
- Transportation Section
  - Flammable liquid
  - DG Class 3 PG II

(ADG Code)



SDS Chlorine

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)

Press. Gas (Liquefied gas) - Contains gas under pressure; may explode if heated.
Ox. Gas 1 - May cause or intensify fire; oxidiser.
Acute Tox. 2 - Fatal if inhaled.
Eye Irrit. 2 - Causes serious eye irritation.
STOT SE 3 - May cause respiratory irritation.
Skin Irrit. 2 - Causes skin irritation.
Aquatic Acute 1 - Very toxic to aquatic life.
- Corrosive to the respiratory tract.

Classification acc. to Directive 67/548/EEC & 1999/45/EC

T; R23 | Xi; R36/37/38 | N; R50
Toxic by inhalation.
Irritating to eyes, respiratory system and skin.
Very toxic to aquatic organisms.

2.2. Label elements

- Labelling Pictograms

Further information

Queensland Codes of Practice for

- Labelling of workplace hazardous chemicals
- Preparation of safety data sheets for hazardous chemicals

- WHSQ Hazchem web pages at www.worksafe.qld.gov.au

- Safework Australia web site www.safeworkaustralia.gov.au
  - WHS Information…hazardous chemicals…GHS, classification, labelling, SDS, exposure standards, airborne contaminants
  - Expansive list of FAQs progressively released