

LOST IN TRANSLATION

A RACIST, POLITICAL INCORRECT SKIT ON CHEMICAL HAZARD CLASSIFICATIONS

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Prophetic law – the art of predictive legislation classifying hazardous substances

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GHS, UNTRDG, HASNO

All three systems classifications include most of the following groups:

- **Explosiveness,**
- **Compressed gases,**
- **Flammable liquids,**
- **Flammable solids, self reactive substances, and substances dangerous when wet,**
- **Oxidizing substances and organic peroxides,**
- **Toxic substances ,**
- **Radioactivity,**
- **Corrosive substances,**
- **Environmentally hazardous and miscellaneous substances.**

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Classification system history

- **UNRTDG stood the test of time**
 - 1957
 - 15 th Edition
- **HSNO**
 - 2001
 - Based on predicted GHS and UNRTDG
- **GHS**
 - 2003
 - 1st Edition

HSNO is not the same as GHS, as GHS was not complete in 2001



Result is New Zealand has an unique classification system that is unlikely to be repeated anywhere Internationally





Objectives of each system is different

- **UNRTDG**
 - transport of dangerous goods
 - principles of classification
 - packing requirements, and testing procedures
 - marking labelling, placading
 - documentation





Objectives of each system is different


- **GHS**
 - all stages of a substance's life cycle
 - Scope;
 - transport,
 - worker,
 - consumer,
 - environmental safety.
- **HSNO**
 - cradle to grave
 - Scope;
 - people (not consumers)
 - environmental safety.





All systems have criteria to define hazardous substances

- But are the definitions the same?

No 

- GHS and HSNO have more categories and there are more definitions

- The criteria for the definitions may be different





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Eg GHS does not use the numbering system found in UNRTDG or HSNO

GHS Classification

eg **IGNITERS**

- Acute Aquatic Hazard Category 3
- Acute Toxicity (Oral) Category 4
- Explosive Division 1.4
- Eye Irritation Category 2A
- Respiratory Irritation Category 3
- Skin Corrosion/Irritation Category 3
- Skin Sensitizer Category 1



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Category comparisons

- **Some hazard categories are not included in some systems – class 6.2 is absent in HSNO**
 - (eg anthrax).
- **GHS and HASNO have very low hazard thresholds, which may not trigger UNTRDG**
 - (eg the baby bath lotion)
- **The system scope may constrain application**
 - (eg HSNO lab exemption, food for consumption, HSNO not interested in consumers)



A single definition may be described differently

Example of description variations for definition of flammable liquid

flash point < 23 °C using a closed cup flash point test, and initial boiling point <= to 35 °C

Classification System	Classification	Class	Subclass	Hazard statement
GHS	1	Flammable liquid		Extremely flammable liquid and vapour
UNRTDG	3.1 A	Flammable	liquid	Very high hazard
HSNO	3 (a)	Flammable	liquid	PG I



The core definitions may be dissimilar eg in USA flammable liquid can mean

- Any liquid having a flash point below 37.8°C – *OSHA*
- Any liquid having a flash point at or below -6.7°C OR any liquid having a flash point of not more than 60.5°C and a boiling point of not more than 35°C. *ANSI*
- Ignitable and spontaneously combustible OR having a flash point less than 60 °C *EPA*
- A liquid having a flash point of not more than 60°C OR Any material in a liquid phase with a flash point at or above 37.8°C that is intentionally heated and offered for transportation or transported at or above its flash point in a bulk packaging. *DOT*
- Any substance with a flashpoint at or below -6.7 °C *CPSC*
- Class IA: Flash point less than 23°C; boiling point less than 38°C *NFPA*





UNTRDG has a hierarchical ranking system that identifies only one the primary hazard.

Precedence of hazard characteristics if packing group equal is in order as follows:

- 1) Substances and articles of Class 1**
- 2) Gases of Class 2**
- 3) Liquid desensitised explosives of Class 3**
- 4) Self-reactive substances and solid desensitised explosives of Division 4.1**
- 5) Pyrophoric substances of Division 4.2**
- 6) Substances of Division 5.2**
- 7) Substances of Division 6.1 with Packing group I
Inhalation toxicity**
- 8) Substances of Division 6.2**
- 9) Material of Class 7**





Other differences

- **GHS and HSNO use multiple classes**
 - may confuse what the primary hazard is
 - makes segregation more complex
- **Different names are used for same substance**
 - eg pipe recovery igniter = gun powder = sodium nitrate

The detail of differences between GHS, UNRTDG and HSNO is in the accompanying paper





Implications for laboratory inventory

1. The NZ CoP allows acceptance of labels that met EU, US, Canadian, or Australian regulations.

On that basis it technically possible to have inventory that records with only the primary hazard classification.

2. However the CoP requires three additional controls for specific hazard types.

- warning required
- trackable substance
- substance-specific Safe Method of Use required.

The three sub controls mean the inventory must be able to classify as sub class and multiple classes





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Other requirements for laboratory inventory

Container level risk management detailing chemical information needed for compliance, safety, cost, use and asset control.

Records of; chemical identification including the vendor catalogue number, chemical abstract service number and formula; quantity details in the original and calculated common units of measure; location details in building, room, cabinet or controlled zone level; hazards including those required by the local regulatory authority, applicable regulatory listings; personal protective equipment recommendations.

Ability to answer questions such as; who has a particular substance; what substances are in this room, building or site; what classes of substances are in this building; what substances are under an individual's control.

And ideally what subclasses are in this room? For example which substances are hazardous to pregnant or hope to be pregnant staff?

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Classification implications for laboratory inventory

- 1. HSNO is unique. International vendors are unlikely to provide a system that is pre-coded with HSNO classification. There is a significant overhead for each CRI's and Uni's in configuring the classification to meet NZ requirements**
- 2. Most laboratory substances will never be approved for use in New Zealand and therefore will not have the unique HSNO classification codes.**
- 3. Given the above there is justified reasons for non compliance with NZ HSNO and use of an internationally recognised hazard classification system such as GHS.**





Non - compliance risk assessment

1 HSNO: 1 GHS

✓ (bulk of chemicals are in here)

1 HSNO: M GHS

✓

M HSNO: 1 GHS

X -Affects explosives

1 HSNO: 1 GHS with different number/descriptor

sort of OK, order is different

1 HSNO: GHS null

X – ecotoxics and desensitised explosives

Explosives could come from UNRTDG table

Null HSNO:1 GHS

✓ **Aspiration hazards**





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Post script

In 2009 ERMA have agreed to alter the NZ HSNO classification system to sort of reflect GHS

This is akin to realigning the foundations of a multi-storey building,

It will take years to reclassify

Research and teaching labs substances will still be “not yet approved”

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In summary

- **HSNO is a unique international orphan in that it failed to predict GHS**
- **Differences to UNRTDG and GHS explained**
- **Implications for specification for laboratory inventory. GHS preferred**
- **Risks of non-compliance with HSNO are justified in research and teaching**

Thank you

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