

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 Globally Harmonized System of Classification and Labelling of Chemicals

Eleventh session, 12 (pm) – 14 July 2006
Item 4(a) of the provisional agenda

IMPLEMENTATION OF THE GHS

Reports from Governments or organizations

Implementation update

Transmitted by the expert from New Zealand

The GHS was introduced as the primary framework for the management of hazardous substances in New Zealand in July 2001 through the Hazardous Substances and New Organisms (HSNO) Act 1996 and regulations made under that Act. This paper briefly describes how the GHS has been integrated into the regulatory framework, in two sections; hazardous property thresholds and classifications, and labelling and information requirements. Issues and difficulties arising with the implementation of the GHS are also addressed.

1. Classification of hazardous substances under the NZ HSNO Act

The HSNO Act contains a very broad definition of “substance”. This may be a pure chemical element or chemical compound, or it may be a mixture of compounds (eg. a proprietary product), or it may be a manufactured article if it possesses explosive properties. A substance is considered to be a “hazardous substance” when it has an effect more hazardous than any one or more of the thresholds established in law for any of the following intrinsic GHS properties:

- Explosiveness; Flammability; Oxidising Capacity; Corrosiveness; Toxicity; Eco-toxicity

The hazardous property **thresholds**, which are contained in the *Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001*^{*}, set the level of hazard below which any substance is not considered hazardous for the purposes of the Act. Thus, ‘non-hazardous’ substances are not regulated by this law.

For the most part, each HSNO threshold is the lowest boundary of the least hazardous category for each GHS class. For example, a flammable liquid needs to have a flashpoint of less than 93°C to be considered hazardous and an acutely toxic substance needs to have an acute oral toxicity (LD₅₀) of less than 5000 mg/kg to be considered to be hazardous.

The **classification** schemes, which are contained in the *Hazardous Substances (Classification) Regulations 2001*^{*}, prescribe for each intrinsic hazardous property a number of types and degrees of hazard. The threshold levels essentially form the bottom step of the corresponding classification schemes. The classification schemes established for the HSNO hazardous properties are almost entirely consistent with the GHS, with some deviations as explained below.

^{*} Regulations accessible at New Zealand Government Legislation website: <http://www.legislation.govt.nz/>

The Classification Regulations use a coding system to label hazard classifications according to:

- numbered classes indicating the intrinsic hazardous property (e.g. Class 6 – toxicity)
- numbered sub-classes indicating type of hazard (e.g. Sub-class 6.1 – acute toxicity)
- lettered categories indicating degree of hazard (e.g. Category A, B ... etc.)

The combination of numbers and letters used in the classification system constitutes the hazard classification of a substance (e.g. 6.1A, highly acutely toxic substance). The full range of hazard classifications is outlined in Table 1. For the most part the numbering system follows that used in the UN Model Regulations on the Transport of Dangerous Goods and builds on this.

Classes 1 to 5 are numbered essentially as in the Model Regulations. Acute toxicity is numbered as sub-class 6.1, also as in the Model Regulations. Skin and eye irritancy, sensitisation and the chronic toxicity endpoints have been assigned to sub-classes 6.3 to 6.9 in Class 6 (toxicity). Sub-class 6.2 is not used in the HSNO regulations as it is used for infectious hazards in the UN Model Regulations and these are not covered under the HSNO (or GHS) systems. Similarly, Class 7 is not used in the HSNO regulations as it is used for radioactivity hazard in the UN Model Regulations and is covered elsewhere in New Zealand legislation.

As the HSNO regulations were produced in 2001 from the then draft GHS proposals there are some areas of deviation from the GHS as published in 2003. Amendments and additions made in Rev.1 of the GHS have also not yet been incorporated, although it is planned to introduce a number of amendments to the HSNO regulations in 2006/07 to pick up these changes. The areas where the HSNO regulations vary from the GHS criteria include:

- Unstable explosives, introduced in GHS Rev.1 are not included in HSNO at present
- Classification of flammable aerosols is currently based on the criteria in the 11th Edition of the UN Model Regulations
- Desensitised explosives, as covered in the UN Model Regulations, are covered under HSNO but not currently under the GHS
- Although the GHS criteria for oral, dermal and inhalational acute toxicity are all used, they are not classified separately but rather combined into a single set of classification categories denoted 6.1A - E
- The HSNO regulations have separated irreversible skin and eye irritation from the reversible effects and assigned the former to Class 8 – Corrosive substances, with reversible skin and eye irritation assigned to sub-classes 6.3 and 6.4 under toxicity. This was done to allow compatibility with the UN Model Regulations numbering system
- HSNO subclass 6.9 covering target organ systemic toxicity does not explicitly distinguish between effects that derive from single exposures or from repeated exposures as in the GHS. Also, the GHS target organ systemic toxicity single exposure category 3 relating to transient target organ effects, such as narcotic effects, is not currently picked up under HSNO
- Aspiration hazard as covered by chapter 3.10 of GHS Rev.1 is currently covered under HSNO by a general criteria for acute toxicity
- Acute and chronic aquatic ecotoxicity have been combined into one classification subclass (9.1) with four categories of hazard
- Terrestrial ecotoxicity, covering the soil environment, terrestrial vertebrates and terrestrial invertebrates, is included in the HSNO framework under sub-classes 9.2 to 9.4 but has not been included in the GHS.

Table 2 provides a correlation of the HSNO classification categories with those of the GHS.

Although the HSNO regulations cover the classification of all hazardous substances, including both single substances and products, they do not specifically address how mixtures, including those which do not have direct data, should be classified. Guidance on this has been provided in a *User Guide to the HSNO Thresholds and Classifications*[†] which is based largely on material provided in the GHS document.

[†] Available at the ERMA New Zealand website: www.ermanz.govt.nz

2. Hazard communication under the NZ HSNO Act

The hazard communication controls for hazardous substances under the HSNO Act are contained in a series of regulations. These regulations are, for the most part, designed to be performance-based. They specify the outcomes that are required, but do not prescribe how to achieve those outcomes.

The labelling aspects of HSNO require the provision of information by priority identifiers (such as pictograms and/or signal words and hazard statements) and secondary identifiers (such as hazard and precautionary statements). Due to the performance based nature of the HSNO regime, the GHS labelling elements represent one, but not the only, means of complying with HSNO labelling requirements. In this respect the GHS labelling elements are not directly mandated in HSNO.

Similarly, the regulatory requirements for workplace documentation on hazardous substances are performance based and these would normally be met by provision of a Safety Data Sheet.

3. Means of meeting performance requirements

Implementation of the HSNO controls by industry is largely facilitated via adoption of codes of practice. These are more prescriptive documents which can describe specific means of meeting the performance-based requirements stipulated in the regulations. Codes of practice can be given quasi-judicial status by being approved according to the process laid down in the HSNO Act.

A code of practice for workplace signage or placarding has already been approved, with one for Safety Data Sheets shortly to be approved. Preparation of labelling codes by New Zealand chemical industry associations is under way. All of these draw heavily on the harmonised hazard communication tools presented in the GHS. In particular, the labelling codes are being based on the material provided in Annexes 1 to 3 of the GHS and are incorporating the codification system for label elements as presented in sub-committee papers 2006/8 and 2006/9.

ERMA New Zealand has already taken the table presented in Annex 3 of sub-committee paper 2006/9/Add.1 and, with the slight modification of replacing the GHS hazard category numbering system in column 1 with the HSNO classification numbering system, has adopted it as the primary labeling guidance document under the HSNO Act. This document is also available on the ERMA New Zealand website.

The Safety Data Sheet code of practice adopts the 16 header SDS format and is consistent with the guidance provided in Annex 4 of the GHS.

4. Issues with the Implementation of GHS in New Zealand

Specific issues or difficulties arising from the implementation of GHS in New Zealand have been as follows:

- Classification of products (mixtures) when there is no product test data and a lack of data available on the components
- Difficulty in determining whether the non-hazardous/hazardous threshold has been crossed in respect of some of the chronic toxicity endpoints because of this absence of data
- Lack of data available which is consistent with some of the criteria in the HSNO/GHS endpoints, making it difficult in determining whether a certain classification has been triggered
- Applying/adapting the GHS hazard based labelling elements to sectors/substances which require a more risk based approach.

The issues with classification have largely been overcome through a combination of the use of the GHS mixture rules for classification, the use of indirect data and a pragmatic approach to classification in some instances – often there may be no likelihood of exposure in a certain area which warrants classification against the corresponding hazard endpoint.

To date, approximately 2500 chemicals have been classified directly from data against the HSNO/GHS hazard classification endpoints and a further 4000 have been partially classified indirectly by correlation with existing international classifications (such as EU). Approximately 5500 of these chemicals are currently contained in a temporary file which will be accessible on the ERMA New Zealand website in late July 2006. It is intended to include these in a searchable database together with classification cut-off concentrations and assigned label elements (using the codification system) by early to mid 2007, to assist industry with implementation of their HSNO obligations.

With respect to applying GHS labelling principles, we are experiencing similar difficulties to other jurisdictions, particularly in applying these to situations where a risk-based approach is more commonly followed currently. This is the case, in particular, with the labelling of pesticides and the labelling of domestic consumer products. Further guidance from the Sub-committee in respect of the 'building block approach' to the adoption of the GHS will hopefully assist.

Although the GHS based HSNO Act has applied to new hazardous substances since July 2001, transitional provisions which extended over a five year period to the end of June 2006 applied to existing substances. From 1 July 2006 all hazardous substances in New Zealand have been transferred under the coverage of the HSNO legislation.

For most commercial, industrial and domestic products, transfer was effected by way of Group Standards. A Group Standard is an approval mechanism under HSNO for a group of hazardous substances (products) of a similar nature, or type or having similar circumstances of use. A Group Standard is therefore risk based in part rather than solely hazard based. The risks of substances in the Group Standard are able to be managed by a single set of conditions. About 200 Group Standards have been established which cover approximately 100,000 products. Manufacturers or importers will be required to undertake their own hazard classification of products into the Group Standards using the composition of the substance and hazard information available such as from the database of classified chemicals discussed above or from that given on a product Safety Data Sheet.

The Scope of any Group Standard describes whether a substance is covered by the Group Standard or not. The scope may provide:

- a description of the types of products covered;
- the chemical and physical characteristics of substances in the group, including limitations on hazard properties;
- intended/restricted uses of substances within the Group Standard;
- substances that may be excluded from the Group Standard;
- any other criteria to help define the parameters of the Group Standard.

Conditions are the detailed requirements that any substance belonging to the Group Standard must comply with. Conditions are given for, amongst others; information provisions (labelling, safety data sheets), site and storage requirements, packaging, equipment and personal protective equipment requirements, transportation and disposal.

All Group Standards contain provisions for staged implementation. The purpose of staged implementation is to allow importers, manufacturers and users of substances a period of time to become familiar with the new Group Standard conditions, and to progressively implement these. In general, for labelling, a period of two years is given for implementation which would mean that full implementation of the GHS in New Zealand is not planned before 2008. However, in order to better align New Zealand's implementation timetable for GHS with those of its major trading partners, an additional provision will allow for acceptance of labeling in accordance with the requirements of specified overseas jurisdictions until the end of 2010.

Further information on Group Standards can be found on the ERMA New Zealand website at www.ermanz.govt.nz.

BIOLOGICAL HAZARD CLASSIFICATION

Property	Toxicity								Corrosiveness			Ecotoxicity			
Class	Class 6								Class 8			Class 9			
Sub-class	6.1 Acutely toxic	6.3 Skin irritant	6.4 Eye irritant	6.5 Sensitisation	6.6 Mutagen	6.7 Carcinogen	6.8 Reproductive / developmental	6.9 Target organ	8.1 Metallic corrosive	8.2 Skin corrosive	8.3 Eye corrosive	9.1 Aquatic	9.2 Soil	9.3 Terrestrial vertebrates	9.4 Terrestrial invertebrates
Hazard classification	6.1A	6.3A	6.4A	6.5A	6.6A	6.7A	6.8A	6.9A	8.1A	8.2A	8.3A	9.1A	9.2A	9.3A	9.4A
	6.1B	6.3B		6.5B	6.6B	6.7B	6.8B	6.9B		8.2B		9.1B	9.2B	9.3B	9.4B
	6.1C						6.8C			8.2C		9.1C	9.2C	9.3C	9.4C
	6.1D											9.1D	9.2D		
	6.1E														

TABLE 2**GHS and NZ HSNO HAZARD CLASSES AND CATEGORIES****PHYSICAL HAZARDS**

Class	GHS Category	HSNO Category
Explosives	Unstable explosives	^a
	Division 1.1	1.1
	Division 1.2	1.2
	Division 1.3	1.3
	Division 1.4	1.4
	Division 1.5	1.5
	Division 1.6	1.6
Flammable gases	Category 1	2.1.1A
	Category 2	2.1.1B
Flammable aerosols	Category 1	2.1.2A ^b
	Category 2	^b
Oxidizing gases	Category 1	5.1.2A
Gases under pressure	Compressed gases	^c
	Liquefied gas	^c
	Refrigerated liquefied gas	^c
	Dissolved gas	^c
Flammable liquids	Category 1	3.1A
	Category 2	3.1B
	Category 3	3.1C
	Category 4	3.1D
Liquid desensitized explosives		3.2A ^d
		3.2B ^d
		3.2C ^d
Flammable solids	Category 1	4.1.1A
	Category 2	4.1.1B
Self-reactive substances and mixtures	Type A	4.1.2A
	Type B	4.1.2B
	Type C	4.1.2C
	Type D	4.1.2D
	Type E	4.1.2E
	Type F	4.1.2F
	Type G	4.1.2G
Solid desensitized explosives		4.1.3A ^d
		4.1.3B ^d
		4.1.3C ^d
Self-heating substances and mixtures	Category 1	4.2B
	Category 2	4.2C
Pyrophoric liquids	Category 1	4.2A
Pyrophoric solids	Category 1	4.2A
Substances and mixtures, which in contact with	Category 1	4.3A
	Category 2	4.3B

Class	GHS Category	HSNO Category
water, emit flammable gases	Category 3	4.3C
Oxidizing liquids	Category 1	5.1.1A
	Category 2	5.1.1B
	Category 3	5.1.1C
Oxidizing solids	Category 1	5.1.1A
	Category 2	5.1.1B
	Category 3	5.1.1C
Organic peroxides	Type A	5.2A
	Type B	5.2B
	Type C	5.2C
	Type D	5.2D
	Type E	5.2E
	Type F	5.2F
	Type G	5.2G
Corrosive to metals	Category 1	8.1A

HEALTH HAZARDS

Class	Category	HSNO Category
Acute toxicity: Oral	Category 1	6.1A
	Category 2	6.1B
	Category 3	6.1C
	Category 4	6.1D
	Category 5	6.1E
Acute toxicity: Skin	Category 1	6.1A
	Category 2	6.1B
	Category 3	6.1C
	Category 4	6.1D
	Category 5	6.1E
Acute toxicity: Inhalation	Category 1	6.1A
	Category 2	6.1B
	Category 3	6.1C
	Category 4	6.1D
	Category 5	6.1E
Skin corrosion/irritation	Category 1A	8.2A
	Category 1B	8.2B
	Category 1C	8.2C
	Category 2	6.3A
	Category 3	6.3B
Serious eye damage/eye irritation	Category 1	8.3A
	Category 2A	6.4A
	Category 2B	e
Respiratory sensitization	Category 1	6.5A

Class	Category	HSNO Category
Skin sensitization	Category 1	6.5B
Germ cell mutagenicity	Category 1A	6.6A
	Category 1B	6.6A
	Category 2	6.6B
Carcinogenicity	Category 1A	6.7A
	Category 1B	6.7A
	Category 23	6.7B
Toxic to reproduction	Category 1A	6.8A
	Category 1B	6.8A
	Category 2	6.8B
	Effects on lactation	6.8C
Specific Target Organ Systemic Toxicity (Single Exposure)	Category 1	6.9A
	Category 2	6.9B
	Category 3	^f
Specific Target Organ Systemic Toxicity (Repeated exposure)	Category 1	6.9A
	Category 2	6.9B
Aspiration hazard	Category 1	6.1E ^g
	Category 2	6.1E ^g

ENVIRONMENTAL HAZARDS

Class	Category	HSNO Category
Aquatic toxicity (Acute)	Category 1	9.1A
	Category 2	9.1D
	Category 3	9.1D
Aquatic toxicity (Chronic)	Category 1	9.1A
	Category 2	9.1B
	Category 3	9.1C
	Category 4	9.1D
Ecotoxic to soil environment		9.2A – 9.2D
Ecotoxic to terrestrial vertebrates		9.3A – 9.3C
Ecotoxic to terrestrial invertebrates		9.4A – 9.4C

Notes:

^a Not currently covered under HSNO classification scheme

^b HSNO criteria taken from UN Model Regulations 11th Edition

^c Covered under local transport law adoption of UN Model Regulations

^d HSNO criteria taken from UN Model Regulations 11th Edition

^e HSNO does not separate reversible eye effects into two sub-categories

^f HSNO does not specifically address the new GHS category of transient target organ effects

^g Aspiration hazard is currently captured under HSNO as an acute toxic hazard where there is evidence in humans of significant acute toxic effects as a result of acute exposure to the substance, where the substance has not already been assigned to a more hazardous category.