PRACTICAL APPLICATION OF GHS

Globally Harmonised System

A presentation at the

Bayer Academy of Responsible Care

May 3, 2002

Globally Harmonised System

The United Nations Conference on the Environment and Development in Rio de Janeiro 3-14 June 1992

Agenda 21, consisting of 40 chapters, defined as an objective the promotion of conditions for Sustainable Development

More specifically, chapter 19 was aimed at developing an International Strategy for the Environmentally Sound Management of Toxic Chemicals

The stated benefit was:

To Facilitate International Trade (WTO)

Chapter 19 consists of 6 Programme Areas

A Expanding and accelerating international assessment of chemical risks;

B Harmonisation of classification and labelling of chemicals;

C Information exchange on toxic chemicals and chemical risks;

D Establishment of risk reduction programmes;

E Strengthening of national capabilities and capacities for management of chemicals;

F Prevention of illegal international traffic in toxic and dangerous products.

Main interest to us today is:

Programme Area B

- Classification Criteria for Substances
- Classification Methods for Mixtures
- Hazard/Risk Communication
  - Labeling
  - Safety Data Sheets
  - Training
- Implementation

The GOALS of GHS are " to protect mankind and the environment by:"

- Providing an International system for hazard communication, which is understood by all
- Giving countries without a system a framework which is Internationally recognised
- Facilitating trade in chemicals whose hazards have been assessed and identified, using an internationally accepted system
- Reducing the need for testing and evaluation of chemicals by unnecessary duplication

The efforts on GHS can be divided into 3 aspects

I CLASSIFICATION OF SUBSTANCES, carried out under the auspices of

- OECD for health and environmental effects
- UNCETDG for physiochemical hazards

II CLASSIFICATION OF MIXTURES, also under the auspices of OECD

III HARMONISATION OF HAZARD COMMUNICATION under the auspices of IOL

- Labels and Safety Data Sheets

The system uses a “modular” approach, to take account of

- Type of product
- Stage of Life cycle

This allows for the selection of elements appropriate to the needs of various end-users e.g.

- Transport
- Consumers
- Workers
- Emergency Responders

TIME TABLE

The activities of the UN-IOMC coordinating group is finalised.

The draft documents are now being discussed in the UN Sub-Committee on GHS and it is expected that in the July 2002 meeting they will be finalised

It is expected that the UN Committee GHS/TDG will adopt GHS in December 2002, followed by

Endorsement in by UN-ECOSOC in 2003

System is expected to be adopted globally by 2008

The PURPOSE of classification ad labeling of chemicals is to:

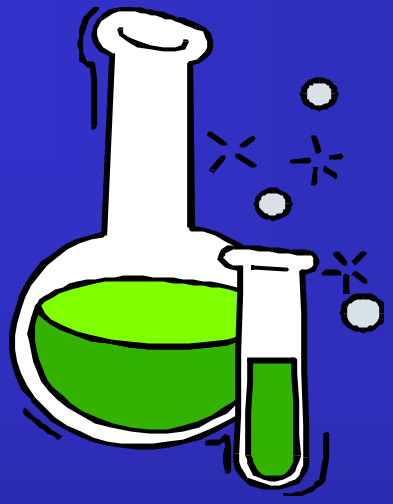
- Systematically identify their hazards
- To draw the attention of the user(s) to tem and
- To enable them to protect themselves

It is established practice, to classify Chemical Hazards into three categories

- Physiochemical
- Toxicological (also called Health Effects)
- Ecotoxicological (or Environmental)

MAIN HAZARD GROUPINGS

Physiochemical Hazards	Toxicological Hazards	Ecotoxicological Hazards
Explosivity	Acute Toxicity	Hazardous for the Aquatic Environment
Oxidising	Irritant / Corrosive (for skin and eyes	
Flammability	Carcinogenity	
Pyrophoricity	Mutagenity	
Self-reactivity		
Reactivity with water	Reprotoxicity	
	Chronic / Target organ toxicity	

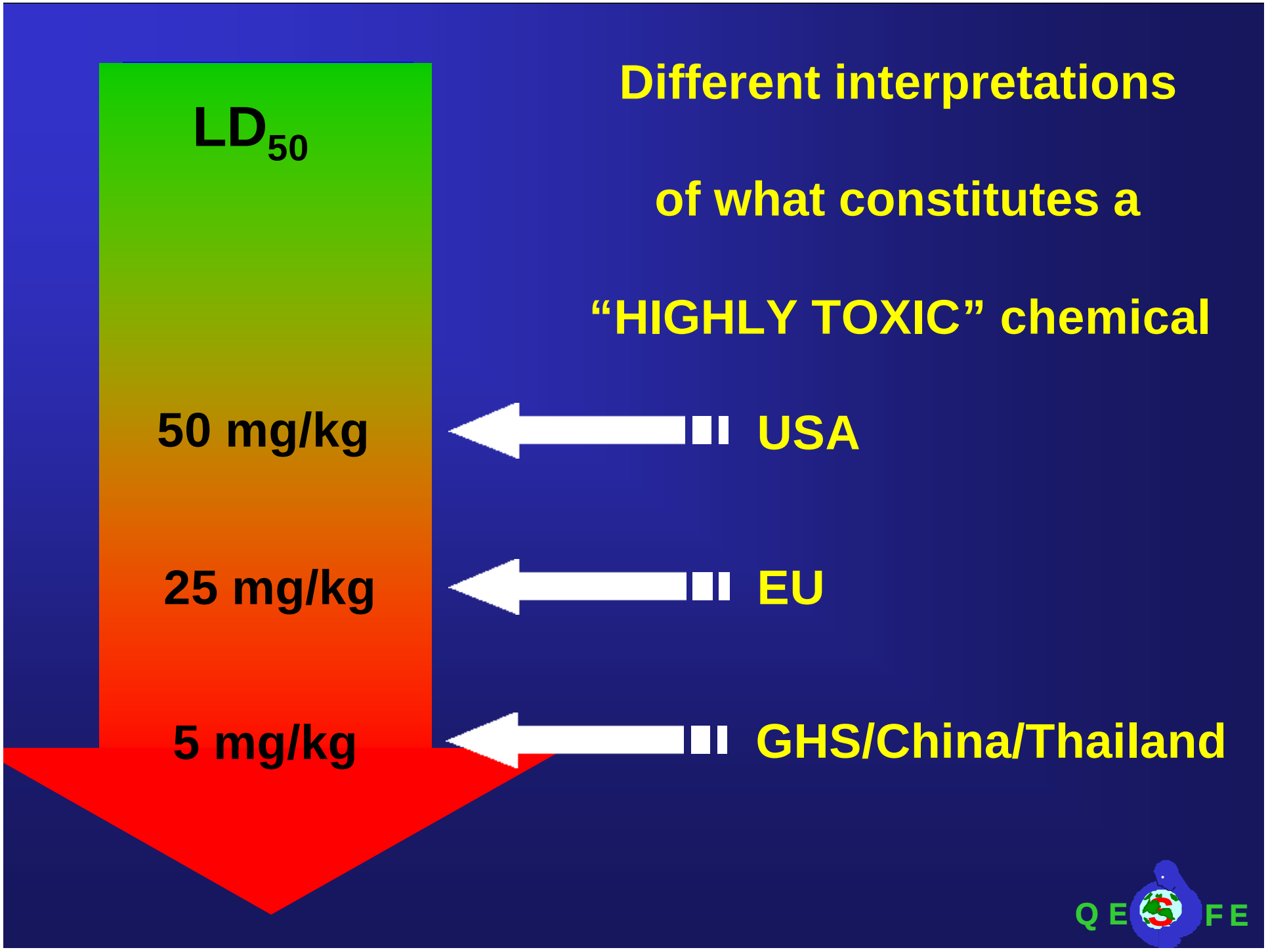


Chemical "X"

LD_{50} = 257 mg/kg

Classification of chemicals varies considerably world-wide

Australia	**Harmful**
India	**Non-Toxic**
Japan	**Toxic**
Malaysia	**Harmful**
Thailand	**Harmful**
China	**Toxic**
New Zealand	**Hazardous**
Korea	**Toxic**


LD50
50 mg/kg
25 mg/kg
5 mg/kg
Different interpretations
of what constitutes a
“HIGHLY TOXIC” chemical
USA
EU
GHS/China/Thailand

➢Classification Criteria for Substances

A substance is the pure chemical e.g. : NaOH (Caustic Soda)

This part of GHS aims to define the criteria to be used, in order to decide what the appropriate classification is for the substance (flammable, toxic, explosive etc..)

The aim is to have uniform classification criteria, which will be the same throughout the world

For countries with WTO membership, this would make international trade much simpler

➢Classification Methods for Mixtures

Most chemical suppliers do not supply pure chemicals.
In fact they mainly supply products

A product may contain several substances, all of which may have completely different chemical properties, in other words they are mixtures

This part of GHS is designed to create uniform methods to decide on the appropriate classification of such mixtures or products

➢Hazard/Risk Communication

Once a product has been classified, it is necessary to determine what hazards are posed by the product as well as associated risks

It is important that the methods used to make these decisions are standardised throughout the world, especially among WTO trading partners.

Once the hazards have been identified and the risks determined, they must be communicated by using appropriate hazard statements and precautionary statements

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➢Hazard/Risk Communication

GHS will ensure that this hazard and risk communication is effected in a world-wide recognised format, through uniform:

- **Labeling**
- **Safety Data Sheets**
- **Training**

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And …the World Trade Organisation (WTO)

- GHS will be recognised as an International Standard
- Goods traded Internationally in accordance with this standard should be accepted in all Countries

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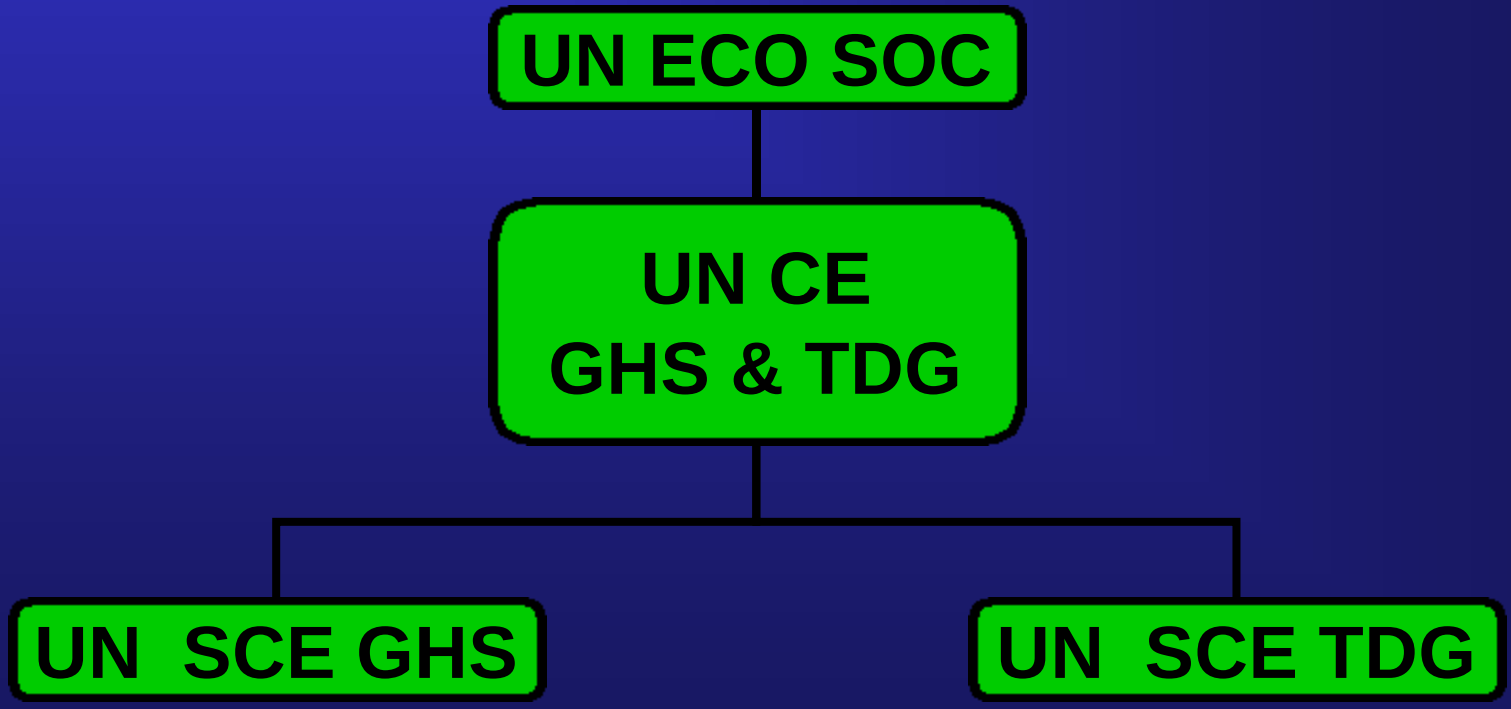
Programme Area B

Global Harmonisation of Classification and Hazard Communication (GHS)

GHS Implementation Mechanism 1 January 2001



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Programme Area B

Global Harmonisation of Classification and Hazard Communication

Timetable

December 2001

IOMC CG/HCCS passes over GHS to UN SCE GHS

December 2002

UN CE GHS/TDG Resolution to UN ECO SOC to adopt and publish GHS

July 2003

UN ECO SOC adopt and publish GHS

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GHS Documents available:

Part 1	Introduction and Hazard communication
Part 2	Physical-Chemical Hazards Criteria
Part 3	Health & Environmental Hazards Criteria
Part 4	General Considerations for the Implementation of the GHS
	Annexes

Classification of Health Hazards

Hazard Class	Hazard Category				
Acute Toxicity, Oral	1	2	3	4	5
Acute Toxicity, Dermal	1	2	3	4	5
Acute Toxicity, Inhalation	1	2	3	4	5
Skin Corrosion/Irritation (Dermal Corrosion = Eye Corrosion)	1(Corrosion)			Irritation	
	1A	1B	1C	2	3
Eye Corrosion/Irritation	1	2	2A		
Respiratory Sensitisation	1				
Skin Sensitisation	1				
Germ Cell Mutagenicity	1A	1B	2		
Carcinogenicity	1A	1B	2		
Reproductive Tox. - Fertility	1A	1B	2	Lactation	
Reproductive Tox. - Development	1A	1B	2		
Target Organ ST – Single Dose	1	2			
Target Organ ST – Repeat Dose	1	2			

QE FE

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Classification of Environmental Hazards

Hazard Class	Hazard Category			
Aquatic Toxicity, Acute	1	2	3	
Aquatic Toxicity, Chronic	1	2	3	4

Physical Chemical Hazards

Hazard Class	Hazard Category						
Explosives	Div1.1	Div 1.2	Div 1.3	Div 1.4	Div 1.5	Div 1.6	
Flammable Gases	1	2					
Flammable Aerosols	1	2					
Oxidising Gases	1						
Pressurised Gases							
Compressed Gases	1						
Liquefied Gases	1						
Refrigerated Liquefied Gases	1						
Dissolved Gases	1						
Flammable Liquids	1	2	3	4			
Flammable Solids	1	2					
Self Reactive Substances	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Pyrophoric Liquids	1						
Pyrophoric Solids	1						
Self Heating Substances	1	2					
Water Reactive ➔ Flammable Gas	1	2	3				
Oxidising Liquids	1	2	3				
Oxidising Solids	1	2	3				
Organic Peroxides	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Corrosive to Metals	1						

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GHS looks to the future and New Hazard Classification Criteria are under Development

- **Water Reactive substances, evolving Corrosive or Toxic Gases**
- **Aspiration Hazards**
- **Respiratory Inhalation**

Possible further Criteria under consideration:

Narcosis (Neurotoxicity)

QE FE

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Word-wide, standardised Harmonised Labelling Elements will be used.

This applies to:

- Pictograms
- Signal Words
- Hazard Statements
- Precautionary Statements
- Product Identifiers

This is of great importance, especially among WTO partners

US WORKPLACE

CANADA CONSUMER

CANADA WORKPLACE

EU CONSUMER/ WORKPLACE

EU WORKPLACE

MALAYSIA and HONG KONG

THAILAND

CHINESE TAIPEI

CHINA

Some of the different symbols currently in use .....

INTERNATIONAL TRANSPORT

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There are 2 standardised options for Harmonised Labelling Elements - Example

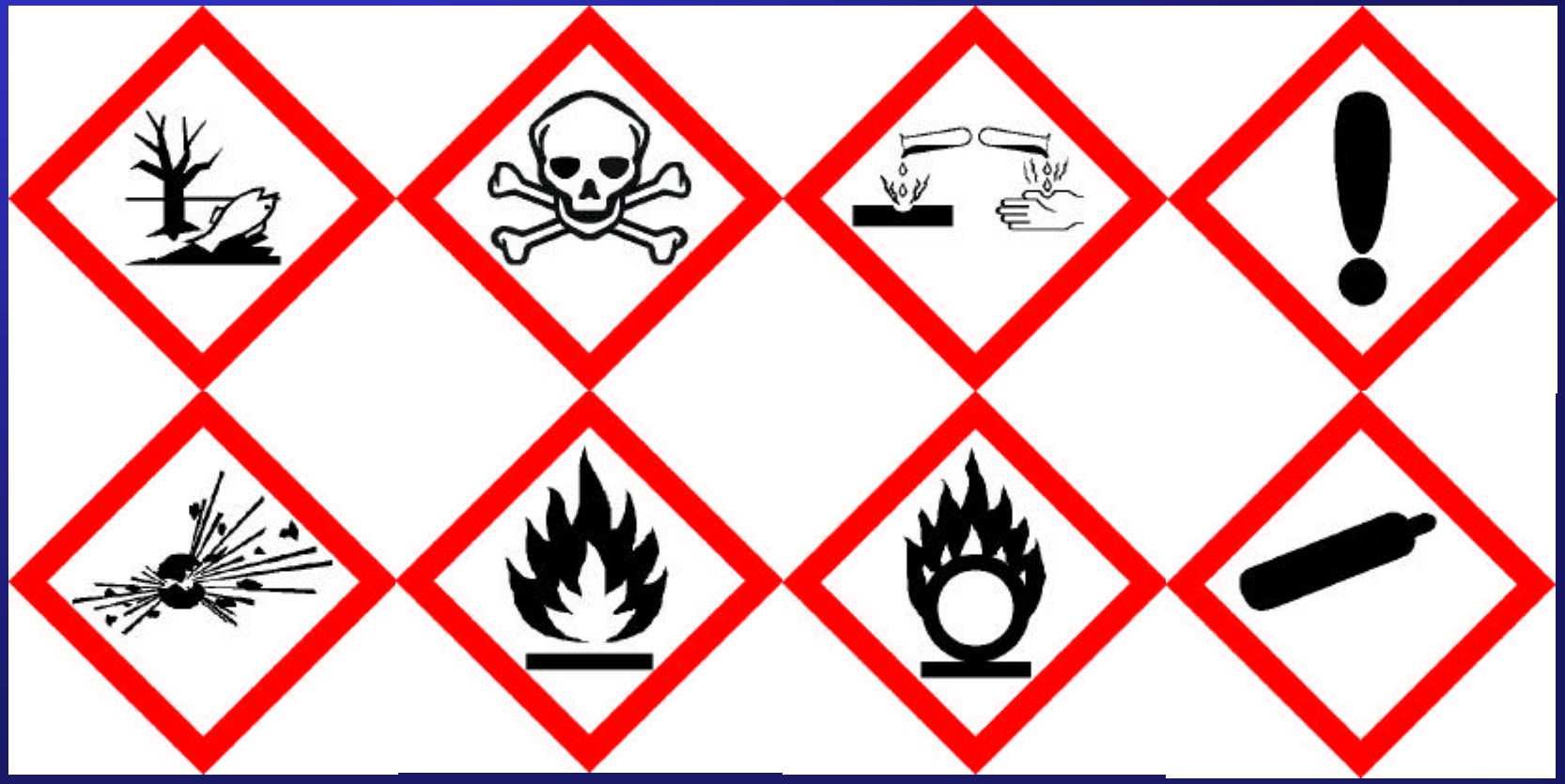
Product label based

Hazard Class	**Acute Toxicity Oral**
Hazard Category	
Pictograms	 **or** 
Signal Word	**Danger**
Hazard Statement	**Fatal if swallowed**

Transport label based

GHS - Globally Harmonised System - Pictograms

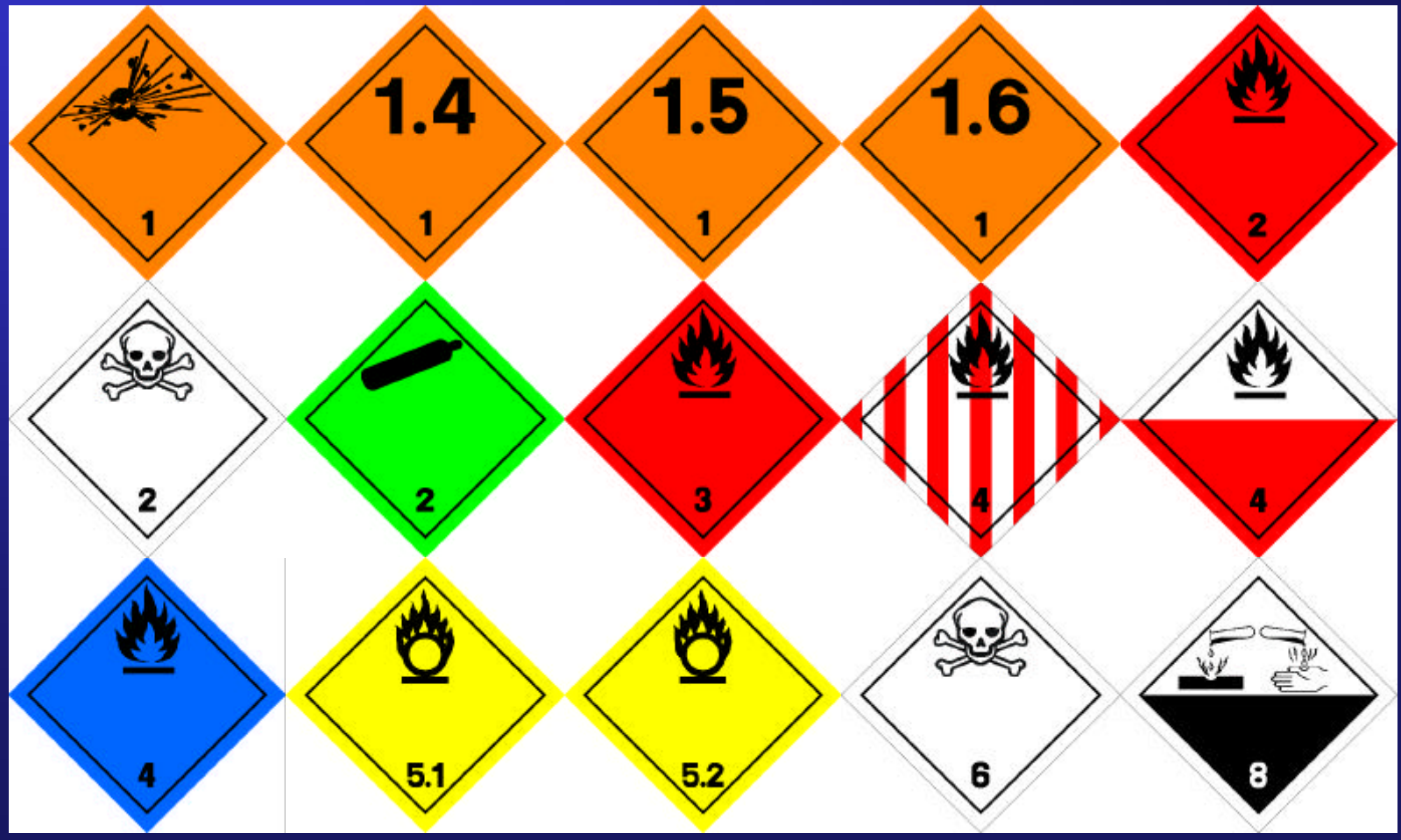
Based on present product labels



Plus new Chronic Health Hazard Symbol

GHS - Globally Harmonised System - Pictograms

Based on UN Transport label



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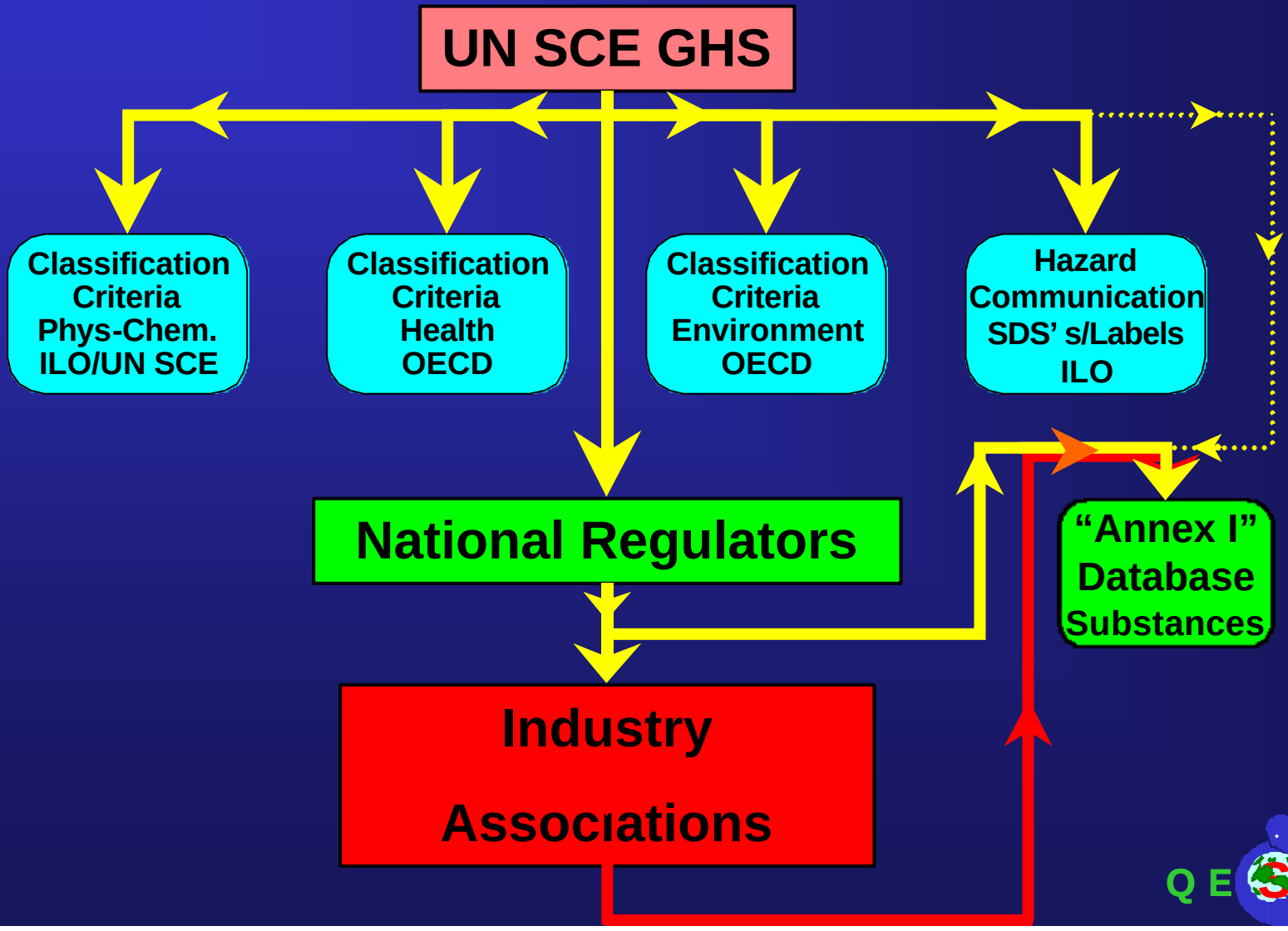
Possible Future Regulatory Structure & Relationships



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European Union

Chemicals Policy Review

7 Working Groups

- Testing Evaluation and Registration
- Risk Assessment
- Authorisation
- Classification and Labelling
- Substances of Concern
- Substances in Articles
- Information in the Supply Chain

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European Union

Chemicals Policy Review

Classification and Labelling Working Group

- GHS Implementation – Technical Details

  (6 Subsidiary Task Groups)

- GHS Implementation – Generic Details
- Substance Database

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Thank you for your attention!