



**Asia-Pacific
Economic Cooperation**

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Agenda Item: Mid-Morning Session

Implementation of GHS in Singapore

Submitted by: Singapore



**Case Study Workshop on the Chemicals
Sector – From Principles to Practice
Hiroshima, Japan
1-2 March 2010**



MINISTRY OF
MANPOWER

Implementation of Globally Harmonized System (GHS) in Singapore

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Scope

- **GHS & Chemical Safety Management**
- **Singapore GHS Building Blocks**
- **Competent Authorities & Stakeholders**
- **Legislative requirements**
- **Strategies & Roadmap**
- **Journey & Milestones**



GHS in a Nutshell

Harmonisation of

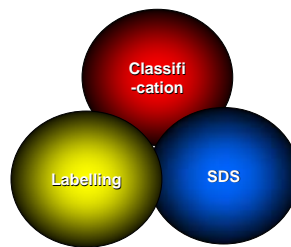
1. Classification
2. Labeling
3. Safety Data Sheet

Hazard Communication System

- Between chemical suppliers & users
- Along the supply chain

Key Information

- Hazards
- Precautions



Hazard Communication in an integral part of Chemical Safety Management

- Policy and strategy
- Selection and procurement
- Register of hazardous chemicals
- **Hazard communication**
Labeling & Safety Data Sheet
- Risk assessments & safe work procedure
- Storage
- Transportation
- Waste disposal
- Personal protection equipment
- Hygiene and Medical Surveillance
- Training
- Emergency planning



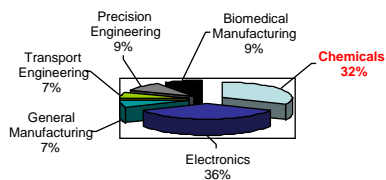
Main Competent Authorities

- **MOM** (Ministry of Manpower)
safety & health aspects of hazardous chemicals at work
- **NEA** (National Environment Agency)
regulates prescribed hazardous substances of environmental concerns
- **SCDF** (Singapore Civil Defence Force)
regulates petroleum & flammable substances
- **SPF** (Singapore Police Force)
regulates explosives
- **MPA** (Maritime & Port Authority)
controls dangerous goods in ports



Key Stakeholders

- Chemical Manufacturers
- Chemical Suppliers
- Singapore Chemical Industrial Council
- Trade Associations
- Chemical users
- Service providers
- Others



GHS Classification adopted by Singapore

Physical Hazard Class	Physical Hazard Category						
Explosive	Unstable Explosives	Div 1.1	Div 1.2	Div 1.3	Div 1.4	Div 1.5	Div 1.6
Flammable gases	Cat 1	Cat 2					
Flammable aerosols	Cat 1	Cat 2					
Oxidizing gases	Cat 1						
Gases under pressure	Compressed Gas	Liquefied Gas	Refrigerated Liquefied Gas	Dissolved Gas			
Flammable liquids	Cat 1	Cat 2	Cat 3	Cat 4 (exception of Diesel)			
Flammable solids	Cat 1	Cat 2					
Self-reactive substances and mixtures	Type A	Type B	Type C & D	Type E & F	Type G		
Pyrophoric liquids	Cat 1						
Pyrophoric solids	Cat 1						
Self-heating substances and mixtures	Cat 1	Cat 2					
Substances and mixtures which, in contact with water, emit flammable gases	Cat 1	Cat 2	Cat 3				
Oxidizing liquids	Cat 1	Cat 2	Cat 3				
Oxidizing solids	Cat 1	Cat 2	Cat 3				
Organic peroxides	Type A	Type B	Type C & D	Type E & F	Type G		
Corrosive to metals	Cat 1						

Note: The categories highlighted are not required in Singapore.

GHS Classification adopted by Singapore

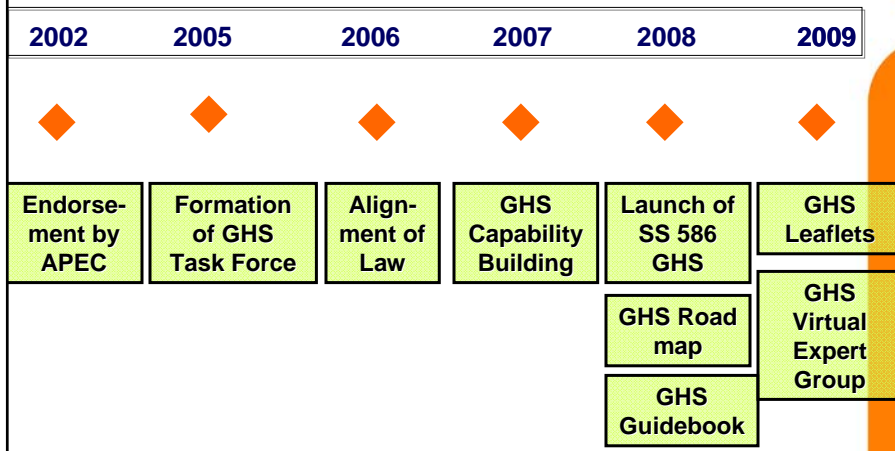
Health Hazard Class	Health Hazard Category				
Acute toxicity	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5 – not adopted
Skin corrosion/irritation	Cat 1A	Cat 1B	Cat 1C	Cat 2	Cat 3- not adopted
	Cat 1- merged Cat 1A, 1B, 1C				
Serious eye damage/eye irritation	Cat 1	Cat 2A	Cat 2B		
		Cat 2- merged Cat 2A and 2B			
Respiratory or skin sensitization	Respiratory Cat 1	Skin Cat 1			
Germ cell mutagenicity	Cat 1A	Cat 1B	Cat 2		
Carcinogenicity	Cat 1A	Cat 1B	Cat 2		
Reproductive toxicity	Cat 1A	Cat 1B	Cat 2	Lactation	
Specific target organ toxicity - single exposure	Cat 1	Cat 2	Cat 3		
Specific target organ toxicity - repeated exposure	Cat 1	Cat 2			
Aspiration hazard	Cat 1	Cat 2 – not adopted			

GHS Classification adopted by Singapore

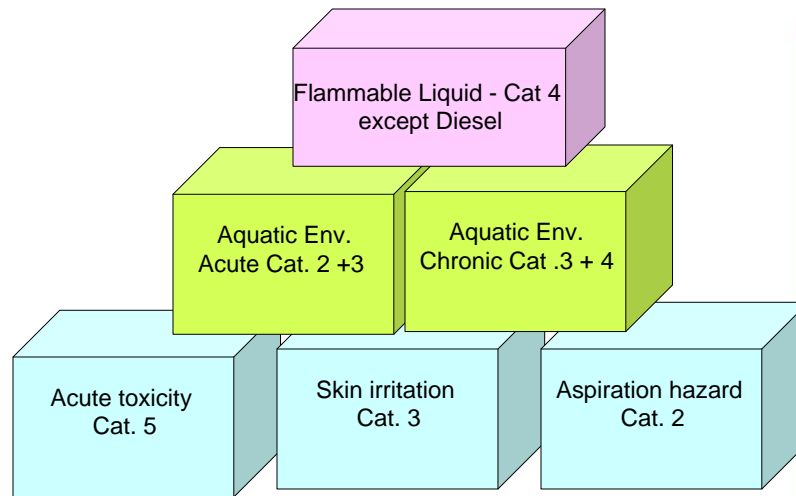
Aquatic Environment Hazard Class	Hazard Category			
Acute toxicity	Cat 1	Cat 2	Cat 3	
Chronic toxicity	Cat 1	Cat 2	Cat 3	Cat 4



Our GHS Journey



Building Blocks not adopted by Singapore



National GHS Task Force

1. Ministry of Trade and Industry
2. Singapore Chemistry Industry Council
3. Ministry of Manpower
4. National Environment Agency
5. Economic Development Board
6. Standards Productivity and Innovation Board
7. Maritime and Port Authority
8. Singapore Civil Defence Force
9. Singapore Police Force
10. Agri-Food & Veterinary Authority of Singapore
11. Health Science Authority
12. Ministry of Health



MINISTRY OF TRADE
AND INDUSTRY
SINGAPORE

SCIC
SINGAPORE CHEMICAL
INDUSTRY COUNCIL



MINISTRY OF
MANPOWER



SPRING
singapore
Enabling Enterprise



HSA



National
Environment
Agency
Air Environment, Noise and Odour



M.P.A.
SINGAPORE



GHS - Strategies

Strategic Outcome

Implementation of GHS for effective hazard communication through labeling and SDS

1
Promoting
GHS

2
Building
capability

3
Engaging
Stakeholders

4
Regulatory
framework

5
Developing
partnership

Strategy 1 Promoting GHS

- Launching of SS 586 Hazard Communication
- WSH Bulletin
- GHS leaflets
- Seminars & Dialogues
- SCIC Newsletter
- SISO Newsletter



Strategy 2 Building Capability

- GHS Awareness Training
- GHS Classification Course
- GHS Chemical Users Course
- GHS Guidebook
- Incorporating GHS into relevant training courses e.g. MHS course



Strategy 3 Engaging Stakeholders

- Licensees of hazardous substances
- Licensees of flammable substances
- GHS Awareness Seminars
 - chemical manufacturers & suppliers
 - users of chemicals
 - others



Strategy 4 Regulatory Framework

- WSH Act
- WSH (General Provisions) Regulations
- Fire Safety Act
- Environmental Protection & Management Act
- SS 586 Hazard Communication

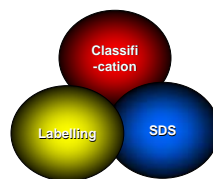


Strategy 5 Develop Strong Partnership

- Competent authorities
- Trade unions
- Employer organisations
- Chemical associations
- Professional institutions
- Virtual GHS Expert Group



Implementation Phases



Phase	Target Group	GHS focus
Phase 1A 2008 to 2010	Chemical manufacturers / suppliers	Single chemicals GHS SDS & Label
Phase 2A 2008 to 2011	Users of chemicals	Single chemicals GHS Label
Phase 1B 2008 to 2012	Chemical manufacturers / suppliers	Mixtures GHS SDS & Label
Phase 2B 2008 to 2013	Users of chemicals	Mixtures GHS Label

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Alignment of Law with GHS

Workplace Safety and Health Act 2006

Section 16 (Duties of manufacturers / Suppliers of Hazardous Substances)

Provide information about the safe use of hazardous substances

- (i) the precautions to be taken;
- (ii) the health hazards associated with the substance;
- (iii) the information relating to any tests or examinations of the substances

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Meaning of Hazardous Substances is in line with GHS classification

1. Corrosive substances
2. Flammable substances
3. Explosives
4. Oxidising substances
5. Pyrophoric substances
6. Gases under pressure
7. Organic peroxides
8. Self heating substances
9. Self-reactive substances
10. Substances which in contact with water, emit flammable gases
11. Toxic substances
12. Mutagens
13. Carcinogens
14. Teratogens
15. Sensitizers
16. Irritants
17. Substances hazardous to aquatic environment



WSH (General Provisions) Regulations

Regulation 42 (Warning labels)



Factory occupier shall ensure that every container of hazardous substance is affixed with one or more labels that

- (a) are easily understood by all persons at work
- (b) warn of the hazards involved with the hazardous substance; &
- (c) specify the precautionary measures to be taken when dealing with the hazardous substance

WSH (General Provisions) Regulations



Regulation 43 (Safety Data Sheet)

- (1) Where any hazardous substance is used, handled or stored in a factory, the occupier shall:
 - (a) obtain a SDS of the substance;
 - (b) assess the information in the SDS & take precautionary measures to ensure the safe use of the substance;
 - (c) make available the SDS to all persons at work who are liable to be exposed to the substance

WSH (General Provisions) Regulations 2006

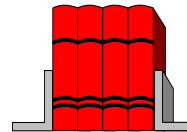
Regulation 43 (Safety Data Sheet)

- (2) Where any hazardous substance is sold to any person for use in a factory, the seller or any agent of the seller who caused or procured the sale shall provide the buyer with a SDS for the substance, giving **accurate & adequate information** on the substance.

SDS information items are in line with GHS SDS

1	Identity
2	Safety and health hazard
3	Composition & ingredient
4	First – aid measures
5	Fire – fighting measures
6	Accidental release measures
7	Precautions for handling and storage
8	Exposure control & personal protection
9	Physical & chemical properties
10	Stability and reactivity
11	Toxicological information
12	Ecological information
13	Disposal considerations
14	Transport information
15	Regulatory information
16	Other relevant information

Other Legislative Requirements



- Competent person to take charge of hazardous substances
- Proper storage, usage, handling & disposal
- Workers shall be warned of the hazards & precautions
- Warning notices indicating the nature of danger
- Measures to control exposure & to protect workers vs toxic dust, fumes & other contaminants
- Regular monitoring of workplace where toxic substances are used, handled or given off.
- Measures to ensure workers are not exposed to toxic substances exceeding the PEL
- Risk assessment before commencement of work
- Periodic medical examinations for exposure to certain chemicals

Environmental Protection and Management Act EPM (Hazardous Substances) Regulations

Requirements on Hazardous Substance

- A licence is required to import, sell or export any hazardous substance.
- A permit is required to purchase, store or use any hazardous substance controlled under the Regulations.
- A licence is required to transport any hazardous substance in quantities exceeding those specified in Regulations before applying for transport approval.
- Containers, tankers and vehicles must be properly labelled and carry appropriate hazard warning panels.

Fire Safety Act Fire Safety (Petroleum & Flammable Materials) Regulations

- A licence is required to import, transport & store petroleum & flammable materials above the exemption quantity.
- Petroleum (flash point below 61C), diesel & 237 flammable chemicals & their mixtures are subjected to licensing control.
- Vehicle transporting, container containing & premises storing regulated petroleum & flammable materials must be labelled in accordance with SS 586 for hazard communication
- SS 586 requires individual container (e.g. drum, package) for transportation & storage of hazardous chemicals be labeled in accordance with GHS; vehicle transporting & premises storing hazardous chemicals be provided with Emergency Information Panel.

Experience & Lesson Learnt

- Cooperation among competent authorities
- An appropriate body to champion or drive GHS
- Engaging stakeholders, in particular chemical manufacturers & suppliers
- Building capability, particularly on GHS classification for SME
- A GHS implementation plan with deliverables, target & time line
- Legislation back-up



**THE SINGAPORE WSH
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