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GHS IMPLEMENTATION IN ASEAN: EXISTING INFRASTRUCTURES AND INITIATIVES

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Background

Chemicals not only play an important role in assisting our daily life, but they also enhanced and improved the quality of our living conditions, through better food supply, health and daily existence. Despite the benefits from the use and exposure to these chemicals, they also have the potential to pose adverse effects to human heath and the environment. Therefore, the initial step in safe chemical use is to define and identify the hazards they may pose to health and environment and classify them using an international agreed methodology. Thus, their hazard information, which was agreed on an international basis, can be conveyed through a series of consistent labels and Safety Data Sheets (SDS) at national, regional or international levels.

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) was introduced in Programme Area B in Chapter 19, Agenda 21 during the United Nations Conference of Environment and Development (UNCED), in Rio de Janerio, Brazil in 1992. With the culmination of more than a decade of work by multidisciplinary experts, the GHS was adopted in 2002 by the United Nations Economic and Social Council's Subcommittee of Experts on the GHS (UNSCEGHS) and endorsed by United Nations Economic and Social Council (ECOSOC) in July 2003. The GHS has the ultimate goal of providing a comprehensive and universal tool for chemical classification and hazard communication, and made available for workers, consumers and the public. Responsibility of maintenance, updating and promoting of the GHS at international level rests with the UNSCEGHS.

The World Summit on Sustainable Development (WSSD) and Intergovernmental Forum on Chemical Safety (IFCS) have endorsed a global GHS implementation target of 2008. The United Nations Institute for Training and Research (UNITAR) and International Labour Organization (ILO) were nominated as focal points for GHS capacity building and in 2001, UNITAR and ILO initiated the *UNITAR/ILO Global GHS Training and Capacity Building Programme* for assisting countries and regions to build capacities for the implementation of GHS. In April 2002, UNITAR and ILO, in collaboration with Organisation for Economic Cooperation and Development (OECD) established the *WSSD Global Partnership for Capacity Building to Implement GHS* as a means to accelerate global GHS implementation by giving a number of specific support activities to strengthen capacities in all related sectors, such as industrial workplaces, agriculture, transport and consumer products at all levels.

GHS Hazard Classification

The GHS uses the term 'hazard classification to indicate that only the intrinsic hazardous properties of substances or mixtures are considered. According to the first revised edition of GHS document (purple book), 'substance' is defined as '*chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition*' and 'mixture' is defined as '*mixtures or solutions composed of two or more substances in which they do not react*'.

There are three pillars under the GHS hazard classification, i.e. Physical Hazards, Health Hazards and Environmental Hazards (Table 1). For the physical hazards, there are 16 different classes; for the health hazards, there are 10 different classes; and there is only one class under the environmental hazards. For each class of the hazard classification, there are various categories. For example, there are two categories, i.e. category 1 (extremely flammable gas) and the category 2 (flammable gas) under the flammable gases class of the physical hazards. The criteria for those different categories can be found in the purple book (United Nations 2005).

Table 1: GHS Hazard Classification (United Nations 2005)

Classification Categories in the GHS	
Physical Hazards:	**Health Hazards:**
1) Explosives	1) Acute Toxicity
2) Flammable Gases	2) Skin Corrosion/Irritation
3) Flammable Aerosols	3) Serious Eye Damage/Eye Irritation
4) Oxidizing Gases	4) Respiratory or Skin Sensitization
5) Gases Under Pressure	5) Germ Cell Mutagenicity
6) Flammable Liquids	6) Carcinogenicity
7) Flammable Solids	7) Reproductive Toxicity
8) Self-Reactive Substances	8) Specific Target Organ Systemic Toxicity – Single Exposure
9) Pyrophoric Liquids	9) Specific Target Organ Systemic Toxicity – Repeated Exposure
10) Pyrophoric Solids	10) Aspiration Hazard
11) Self-Heating Substances	
12) Substances which in contact with water release flammable gases	**Environmental Hazards:**
13) Oxidizing Liquids	1) Hazardous to the Aquatic Environment
14) Oxidizing Solids	
15) Organic Peroxides	
16) Corrosive to Metals	

GHS Hazard Communication

Hazard communication is important for conveying hazard information to the audience and pictogram is one of the useful tools for the hazard communication purposes. The pictograms used in the GHS are shown in Table 2 and all the GHS pictograms should be in the shape of a square set at a point. These pictograms are similar to the pictograms in the United Nations Recommendation on the Transport of Dangerous Goods (UNRTDG), except for the exclamation mark (i.e. acute hazard) and the fish and tree (i.e. environmental hazard) pictograms.

As far as pictograms are concerned, for transport, the pictograms prescribed by the UNRTDG should be used. When a UNRTDG pictogram is being used, then the GHS pictogram for the same hazard should not appear.

Safety Data Sheet (SDS)

Besides the pictograms, safety data sheet (SDS) is also an important tool for hazard communication. Currently, different terminology for the SDS is practiced by different countries, for example, in some countries it is known as 'material safety data sheets (MSDS)' or 'chemical safety data sheets (CSDS). Nonetheless, the intervention of the GHS harmonise them to be known as safety data sheet (SDS). Under the GHS, the SDS contains 16 headings, as illustrated in Table 3.

Table 2: GHS Hazard Communication (United Nations 2005)

		
ACUTELY TOXIC	**FLAMMABLE**	**OXIDISING**
		
EXPLOSIVE	**CORROSIVE**	**COMPRESSED GAS**
		
ACUTE HAZARD	**ENVIRONMENTAL HAZARD**	**HEALTH HAZARD**

Table 3: Headings of the SDS (United Nations 2005)

No	Description
1.	Product, company identification
2.	Hazards identification
3.	Composition information on ingredient
4.	First aid measures
5.	Fire fighting measures
6.	Accidental release measures
7.	Handling and storage
8.	Exposure controls, 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 information

Existing infrastructures and initiatives at regional level: ASEAN

a) Industry

In most countries, including members of ASEAN countries, chemicals had been one of the key factors that had accelerated the countries' economies. Therefore, many chemicals, in terms of types and volumes, have been produced by and used in the factories in order to fulfill the needs for chemicals or chemical related products worldwide. However, despite the benefits gained from chemicals, they also have the potential to pose hazards and cause adverse effects to human health and environment. In this regard, one of the objectives to implement GHS in industrial workplace is to ensure workers and employers have the capacities and capabilities to identify the risk associated when handling chemicals, through comprehensive hazard communication and safety data sheets (SDS) for that particular chemical. Additionally, appropriate precautionary behaviour among the workers and employers is needed as well as safety measures while handling chemicals.

Under the cooperation programme area on Standards in ASEAN-OSHNET, to the extent that GHS is concerned, Department of Occupational Safety and Health (DOSH), Malaysia have completed the first draft of 'ASEAN Guidelines on Chemical Classification, Labelling & Safety Data Sheet'. These guidelines have incorporated the principles of GHS and complied with GHS. The draft guidelines was then discussed and deliberated at the ASEAN-OSHNET Workshop on 6-8 March 2006, Grand Seasons Hotel, Kuala Lumpur, Malaysia. Based on the inputs and recommendations from the participants during the workshop, DOSH Malaysia is now amending the draft guidelines and this will be circulated to members of ASEAN countries soon.

b) Agriculture

In order to enhance productivity of agriculture products, agrochemicals (e.g. pesticides and fertilizers) have been widely used by farmers and farm workers. Although agrochemicals provide such enhancement in terms of quantity and quality of agriculture products, the use of agrochemicals may pose hazards to those who are using them as well as to the environment.

As far as ASEAN is concerned, agriculture products play an important role in expediting the economies across the region and in 2002, approximately 48.1 percent of the total number of ASEAN population were involved in agriculture[i]. Cooperation in agriculture sector among members of ASEAN countries is crucial. During ASEAN Ministers on Agriculture and Forestry (AMAF) meeting in 1984, members of ASEAN agreed to promote the development of agriculture cooperatives in the ASEAN region through: (i) exchanges of relevant information and experiences among member countries; (ii) education and training of personnel and cooperators; (iii) research and development programmes; and (iv) other project activities related to agriculture cooperatives[ii].

Integrated Pest Management (IPM) has been promoted under the Strategic Plan of Action (2005-2010). The aims of IPM are to improve agriculture productivity, cost effectiveness and ensure environmental sustainability[iii]. Through IPM, farmers can share experiences and information on pest controls, such as natural enemy monitoring methods, biological control,

physical control and chemical control. As far as conventional pest control methods are concerned, most of the farmers use pesticides for pest control. Through sharing of experiences and information exchange among the farmers in IPM, they have the opportunity to be exposed to other alternatives for pest control instead of using pesticides. However, in circumstances that those alternatives are not available, with adequate information from IPM, farmers can choose a more 'friendly' pesticide, which will pose less hazards to human health and environment when compared to the pesticides that are currently being used. IPM also emphasizes on the health of farmers and farm workers and proposed extension activities to assist them to learn about pesticide labelling and pesticide selection.

c) Transport

Transportation of dangerous goods, such as chemicals and products containing chemicals via road, rail, water and air might pose hazards to those directly involved in transport (e.g. drivers), workers that load and unload packages of dangerous goods into or from transport vehicles and also to the communities on the transit route and the environment especially in the case of an accident. Safety in the transport of dangerous goods has been initiated and promoted by UN Economic and Social Council's Sub-Committee of Experts on the Transport of Dangerous Goods (UNSCETDG), formerly known as UN Economic and Social Council's Committee of Experts on the Transport of Dangerous Goods, which published the first edition of UN Recommendations on the Transport of Dangerous Goods (UNRTDG) in 1956.

The ASEAN Transport Ministers have reaffirmed that an efficient and integrated transport system was the key for ASEAN to integrate with global economy, improve competitiveness and enhance the inflow of foreign direct investment. On 16th December 1998 in Hanoi, Vietnam, the ASEAN Framework Agreement on the Facilitation of Goods in Transit has been endorsed by members of ASEAN countries [iv] . The objectives of this agreement are: (i) to facilitate transportation of goods in transit, to support the implementation of the ASEAN Free Trade Area, and to further integrate the region's economies; (ii) to simplify and harmonize transport, trade and customs regulations and requirements for the purpose of facilitation of goods in transit; and (iii) to establish an effective, efficient, integrated and harmonized transit transport[v] system in ASEAN. In Article 25 of this agreement, nine (9) protocols have been identified within the context of this agreement, and working groups shall be established or designated in order to conclude the protocols which shall form integral parts of this agreement. Protocol 9 emphasizes on the dangerous goods where dangerous goods are defined as substances and articles which may affect the interest of environment, health, safety and national security. Nevertheless, to the extent that transport of dangerous goods are concerned, as stipulated in Article 20, transit transport of dangerous goods to be specified in Protocol 9 shall not be permitted under this agreement, except when special permit is available.

On 20th September 2002, by recalling the ASEAN Framework Agreement on the Facilitation of Goods in Transit (1998) and recognizing Article 20 and 25 in the agreement, Protocol 9 has been signed by ASEAN Transport Ministers in Jakarta, Indonesia[vi] during the 8th ASEAN Transport Ministers Meeting (ATM) [vii] . Protocol 9 provides for the simplification of procedures and requirements for the transit transport of dangerous goods in ASEAN, by using internationally accepted standards and guidelines, i.e. UNRTDG, European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) and Restructured ADR[viii]. These standards and guidelines shall be to the existing versions as the date of signature of this Protocol, or in other words, as Protocol 9 signed in 2002, thus Protocol 9 refers to UNRTDG (revised version 2001), ADR (revised version 2001) and Restructured ADR (revised version 2001). ASEAN Senior Transport Officials Meeting is the responsible body for the monitoring, review, coordination and supervision of all aspects relating to the effective implementation of Protocol 9.

d) Consumer Products

Most of the consumer products have been invented and manufactured in order to

enhance living styles and conditions. However, some of the consumer products, such as paints, dyes and cleansing products might contain hazardous chemicals where consumers are exposed to the risks when using them in their daily life. Therefore, there is a need to label consumer products, based on likelihood of injury (i.e. hazard communication) and this label is likely to be the sole source to convey necessary information to the consumers. Besides that, the labels on consumer products must be comprehensive where simplest and most easily understandable terms are being used.

In ASEAN, there are no explicit efforts amongst members of ASEAN countries in regulating consumer products, particularly consumer products that contain hazardous chemicals. ASEAN has placed their emphasis on cosmetic[ix] products instead of consumer products. However, since most of the cosmetic products were using chemicals as initial substances or catalysts, therefore sanitation and hygiene practices for industries who manufactured cosmetic products must be enhanced. On 2nd September 2003, an agreement on the ASEAN Harmonized Cosmetic Regulatory Scheme was signed by members of ASEAN[x]. The objectives for this agreement were to enhance cooperation amongst the ASEAN members and to eliminate restrictions to trade of cosmetic products. As stipulated in this agreement, a number of technical documents for cosmetics shall be adopted and implemented by ASEAN members, *inter alia*, including the ASEAN Guidelines for Cosmetic Good Manufacturing Practice (GMP)[xi].

Existing infrastructures and initiatives at national level: ASEAN

Table 4: Existing legislation that could accommodate the GHS in ASEAN

Country	Existing legislation that could accommodate the GHS
Brunei Darussalam	• Poison Act (1988)
Cambodia	• Constitution of the Kingdom of Cambodia (state, 24/09/93) which covered mineral chemicals, and chemicals drugs. • Law on Environmental Protection and Natural Resource management (MoE, 24/12/96) which covered toxic chemical and hazardous waste). • Law on the management of Quality and Safety Product and Service (MoC,21/06/00) which covered all products and goods. • Law on Pharmaceuticals Management (MoH, 09/05/96) which covered chemical substances for pharmaceutical production and products. • Related Sub-degrees: i. Sub-Degree on the EIA, Solid Waste, Water Pollution Control, (MoE) ii. Sub-Degree 69 on Standards and Management of Agricultural Materials (MoAFF) iii. Sub-Degree on the Industrial Standardization of Cambodia No.42 (MoIME)
Indonesia	• Law No.12 (1992) on Pesticides • Government Regulation No. 472 (1996) on Safety of Hazardous Substances for Human Health • Ministry of Industry and Trade Decree No.254 (2000) on Importation Procedures of Certain Hazardous Substances • Ministry of Agriculture Decree No. 434.1 (2001) on Requirements and Registration of Pesticides • Minister of Trade Decree No. 04 / M-DAG / PER / 2 / 2006 on Distribution and Control of Hazardous Substance • Minister of Industry Decree No. 24 / M-IND / PER / 5 / 2006 on Control of Production and Usage of Hazardous Control in Industry

Lao PDR	• Environment Protection Law • Regulation on Environmental Impact Assessment • Agriculture Law • Regulation on Management and the use of Pesticides in Lao PDR • Regulation on Plant Quarantine • Drugs and Medical Product Law • Processing Industry Law • Transport Law • Penal Code Law • Customs Law
Malaysia	• The Occupational Safety and Health (Classification, Packaging & Labelling of Hazardous Chemicals) Regulations 1997 (only for Industrial Chemicals to be used at a Workplace) • Pesticides (Labelling) Regulations 1984 • Poison Act 1952 • Environmental Quality Act 1974 • Petroleum (Safety Measures) Act 1984 • Transportation of Dangerous Good UN code • Hazchem code
Myanmar	• Poison Act • Explosives Act • Oil Field Act • Petroleum Act • Factory Act • Motor Vehicle Law • Private Industrial Enterprises Law • Pesticide Law • Public Health Law • Precursor Chemicals for Dangerous Drugs Act
Philippines	• RA 6969 –Toxic Substances and Hazardous and Nuclear Wastes Control Act • PD 1144 – Creation of Fertilizer and Pesticide Authority • PD 881 – Empowering the DOH to regulate the labelling, sales and distribution of hazardous substances. • RA 7394 – Consumer Act of the Philippines • RA 9165 – Dangerous Drugs Act • RA 1185 – Fire Code of the Philippines
Singapore	• Environmental Pollution Control Act and the Environmental Pollution (Hazardous Substances) Regulations • Workplace Safety and Health Bill • Control of Plants (Registration of Pesticides) Rules • MPA (Dangerous Goods, Petroleum and Explosives) Regulations, 1997
Thailand	• Hazardous Substance Act 1992 (B.E.2535) • Factory Act 1992 (B.E. 2535) • Notification of Ministry of Interior Re: Occupational Safety related to Dangerous Substances 1991 (B.E.2534) • Notification of Hazardous Substance Committee Re: Land Transportation of Hazardous Substance 2002 (B.E. 2545) • Armament Control Act 1987 (B.E. 2530) • Drug Act 1967 (B.E.2510) • Food Act 1979 (B.E.2522) • Cosmetic Act 1992 (B.E 2535) • Psychotropic Substance Act 1975 (B.E. 2518) • Narcotic Act 1979 (B.E. 2522) • Emergency Decree on Volatile Substance 1990 (B.E. 2533) • Hazardous Substance Act 2001 (B.E. 2544) Act at the moment only include chemicals under Chemical Weapon Convention
Vietnam	• Decision no. 1452 by Ministry of Health issuing list of insecticide - sterilizing chemicals and the • Circular no. 34 by Ministry of Trade issuing a Statute on labelling goods circulated domestically and imported - exported goods. (Effective since 1999) products which are allowed to be registered for use, allowed to be registered but use is limited, or banned from household and medical use. (Effective since 2002) • Instruction no. 07 by Ministry of Fisheries banning use of Chloram Phenicol and management of chemical and veterinary medicine in fisheries. (Effective since 2001)

Table 5: Existing Chemical Classification System in ASEAN

No.	Country	Existing Chemical Classification System in ASEAN				
		Industrial workplace	Agriculture	Transport	Consumer products	Others*
1.	Brunei Darussalam	/	/			
2.	Cambodia		/			
3.	Indonesia	/	/	/	/	
4.	Lao PDR	/	/	/	/	/
5.	Malaysia	/	/	/		
6.	Myanmar		/			/
7.	Philippines	/	/	/	/	
8.	Singapore	/		/		
9.	Thailand	/	/	/	/	
10.	Vietnam	/	/	/	/	
Total		**8**	**9**	**7**	**5**	**2**

*Others
Lao PDR:

- Toxic and Hazardous Substance
- Chemicals for health and medical purposes

Myanmar:

- Precursor chemicals for dangerous drugs

Table 6: Existing Hazard Communication System in ASEAN

No.	Country	Existing Hazard Communication System in ASEAN				
		Industrial workplace	Agriculture	Transport	Consumer products	Others*
1.	Brunei Darussalam	/	/			
2.	Cambodia		/			
3.	Indonesia	/	/	/	/	
4.	Lao PDR	/	/	/	/	/
5.	Malaysia	/	/	/		
6.	Myanmar		/			
7.	Philippines	/	/	/	/	
8.	Singapore	/	/	/		
9.	Thailand	/	/	/	/	
10.	Vietnam	/	/	/	/	
Total		**8**	**10**	**7**	**5**	**1**

*Others
Lao PDR:

- Chemicals for health and medical purposes

Conclusions

At the national level, all ten ASEAN member countries were progressing well in implementing GHS. All member countries of ASEAN already have existing legislation(s) pertaining to one or several of the four sectors (i.e. industrial workplace, agriculture, transport and consumer products) that could accommodate the GHS agenda in their respective country. Some of the ASEAN member countries already have chemical classification and hazard communication systems in the industrial workplace (i.e. eight out of ten countries have a chemical classification system and eight out of ten countries have a hazard communication system for industrial workplace); agriculture (i.e. nine out of ten countries have a chemical classification and ten out of ten countries have a hazard communication system for agriculture); transport (i.e. six out of ten countries have

a chemical classification system and six out of ten countries have a hazard communication system for transport); and consumer products (i.e. five out of ten countries have a chemical classification system and five out of ten countries have a hazard communication system for consumer products). In general, most of the ASEAN member countries reported to have encountered challenges while implementing GHS in their respective country, and the stated challenges are (not in any particular order of priority): (i) lack of finance; (ii) lack of human resources; (iii) lack of expertise; (iv) lack of awareness; (v) lack of coordination and cooperation amongst relevant agencies; (vi) time constraint; and (vii) low participation from SMEs.

In the ASEAN region, cooperation and collaboration between the ASEAN members in the four key sectors, i.e. industrial workplace, agriculture, transport and consumer products were assessed (situation analysis) and the gap analysis was also conducted. From the situation and gap analysis, it was found that the industrial workplace is progressing well in terms of GHS implementation where an 'ASEAN Guidelines on Chemical Classification, Labelling & Safety Data Sheet' is being finalized. For agriculture sector, although IPM is being promoted amongst ASEAN member countries nevertheless the GHS agenda is not incorporated into IPM, whereas for transport sector, the amendment of Protocol 9 to incorporate UNRTDG revised version that complies with GHS is uncertain. There are no explicit efforts showing that GHS is implemented for the consumer products and this sector faces the most challenges due to the difficulties for the consumer products to be tested, characterized, classified and labelled. Therefore, on the overall, it was found that the GHS implementation is currently being given a low priority at the ASEAN regional level.

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i Source: ASEAN Statistical Year Book 2004

ii Full text of ASEAN Ministerial Understanding on ASEAN Cooperation In Agriculture and Cooperatives can be found at http://www.aseansec.org/6178.htm

iii A brief explanation for IPM booklet which entitled 'Think IPM and Take Action' has been prepared and is now available at http://www.aseansec.org/13578.htm

iv The full text of ASEAN Framework Agreement on the Facilitation of Goods in Transit can be found at http://www.aseansec.org/7377.htm

v 'Transit transport' means transit of goods and means of transport across the territory of one or more Contracting Parties (members of ASEAN countries), when the passage across such territory or territories, with or without transshipment, ware housing, breaking bulk or change in the mode of transport, is only a portion of a complete journey beginning and terminating beyond the frontier of one or more Contracting Parties across whose territory the traffic passes (as stipulated in ASEAN Framework Agreement on the Facilitation of Goods in Transit)

vi The full text of Protocol 9 on Dangerous Goods can be found at http://www.aseansec.org/14239.htm

vii The full text of 8th ATM press release can be found at http://www.aseansec.org/12608.htm

viii Restructured ADR means the restructured version of the ADR, applicable from 1 July 2001

ix As stipulated in first revised edition of GHS document (2005), pharmaceuticals, food additives, cosmetics, and pesticide residue in food will not be covered by the GHS in terms of labelling at the point of intentional intake. However, these types of chemicals would be covered where workers may be exposed, and, in transport if potential exposure warrants.

x The full text of ASEAN Harmonized Cosmetic Regulatory Scheme can be found at http://www.aseansec.org/18213.htm

xi Guidelines for Cosmetic Good Manufacturing Practice can be found at http://www.aseansec.org/18514.htm