Developing a National GHS Implementation Strategy

A Guidance Document to support implementation of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

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Knowledge to lead

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United Nations Institute for Training and Research

IOMC
INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS
A cooperative agreement among FAO, ILO, UNEP, UNIDO, UNITAR, WHO and OECD

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Foreword

The international community is increasingly recognising the GHS as an important tool for improving chemicals management and for implementation of international chemicals and waste agreements, including the Strategic Approach to International Chemicals Management (SAICM). UNITAR and ILO, through the *Global GHS Capacity Building Programme*, have long emphasised the importance of capacity building to facilitate the implementation of the GHS and have been actively involved since the GHS was adopted in 2002 by ECOSOC as an international standard for chemical classification and hazard communication.

Part of our work to support countries to implement the GHS was the development of this guidance document on "Developing a National GHS Implementation Strategy". Since this document was first published in 2005, UNITAR has worked with several countries across different regions using this methodology as framework guidance for a systematic, country-driven approach to successful GHS implementation strategy development. Based on the experiences and feedback from our country, business and industry, and civil society partners, as well as international experts, we have now updated the guidance document and are pleased to present this revised edition.

The GHS continues to evolve and implementation of the system is an ongoing and dynamic process. UNITAR and ILO strive to maintain our leading role in facilitating the ultimate goal of worldwide GHS implementation. We look forward to continuing our work with countries, regions, and partners to further develop this document and strengthen capacities for the GHS.

We would like to thank our core donors – the European Union and the Government of Switzerland – for their financial contributions, and the Programme Advisory Group (PAG) and the members of the *WSSD Global Partnership for Capacity Building to Implement the GHS* for their continued expert feedback and support.

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ABOUT THIS GUIDANCE DOCUMENT

This document is intended to provide guidance for countries that choose to develop a National GHS Implementation Strategy through a systematic, country-driven process. The document has three parts. Part A provides a background and context for the GHS. It first introduces the concept of chemical hazard communication and provides an overview of key GHS provisions including an overview of the hazard classes and details on hazard communication. Part B discusses issues related to coordinating GHS capacity building and implementation, from the key sectors affected by GHS implementation (*i.e.* industrial workplaces, agriculture, transport and consumer products) to the key actors involved in GHS implementation at the national level (*i.e.* government, business and industry, and civil society). Part C provides guidance on developing a National GHS Implementation Strategy. A number of Annexes provide further details on the context of the GHS and additional resources for further information on the system.

Within the document, suggestions are provided to assist in conducting a situation and gap analysis, comprehensibility testing, legal analysis and developing a legal implementation framework, and sector-specific implementation plans. These elements may then be combined to create a *National GHS Implementation Strategy* (NIS) document. Information on GHS implementing activities and regional cooperation are also covered.

The guidance is flexible in nature – it is not meant to be prescriptive in any sense. Each country can consider and make decisions regarding the issues raised in accordance with its own preferences, priorities and national circumstances. While each activity is explained in detail, the actual process of GHS implementation will vary depending on each country's situation. Therefore, not all steps may be appropriate for each country, and some steps can be adapted or modified as necessary. It is hoped that users will find that this guidance plays a constructive and practical role in implementing the GHS at the national level.

PART A BACKGROUND AND CONTEXT OF THE GHS

Part A of this document introduces the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and chemical hazard communication. Information is also provided on the relationship of the GHS to sustainable development and for relevant international chemicals management agreements.

1. Introduction to the GHS

The production and use of chemicals are fundamental economic activities and important for the development of all countries, whether industrialised or developing. Directly or indirectly, chemicals affect the lives of all humans and are essential to our food supply (fertilizers, pesticides, food additives, packaging), our health (pharmaceuticals, cleaning materials), and our daily existence (appliances, fuels, etc). However, there are potential adverse affects to human health and the environment from use of and exposure to these chemicals.

The first step in safe chemical use is to identify the hazards they may pose to health and the environment (*e.g.,* if they can they cause cancer or be hazardous to aquatic environments) and to communicate appropriate precautions and measures to be taken to handle or use the chemical safely or in the event of an accident (*i.e.* transferring information through hazard communication). This inherently complex knowledge must be organised so that essential information on the hazards and corresponding control measures can be identified and conveyed to the user in a format that is easy to understand. The hazard classification and labelling process, along with appropriate training and education, is a primary tool for establishing effective information transfer. Understanding the degree of hazard a chemical represents leads to the correct control action(s) and safe use. This knowledge should be available within reasonable effort and cost.

Chemical hazard information can be conveyed in a variety of ways, for example, in the form of a label on a container; in the form of safety data sheets (SDS) provided with the hazardous chemical; or through placards, posters or markings. This information generally includes an indication of the hazard(s) in text form and/or with symbols. In addition to the hazard information, information may also include statements regarding safe use or handling, or other types of precautionary measures.

In the workplace, for example, safety data sheets (SDS) should be made available to the worker. In the transport sector, documents for emergency response may supplement the information on placards or markings. In the context of most workplace and transport chemical hazard communication systems, user training to access the information and take proper steps for protection is also routinely provided. In consumer settings, however, the label may be the only communication mechanism available to provide information to promote safe handling and use.

One important tool for addressing the need for safe chemicals management is the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The GHS is an international standard for chemical classification and hazard communication.[1] It is also a tool

[1] The GHS document – sometimes referred to as the "Purple Book" – in all six UN languages, as well as meeting documents and other information for the SCEGHS, can be found at the GHS Secretariat website at: www.unece.org/trans/danger/publi/ghs/ghs.html.

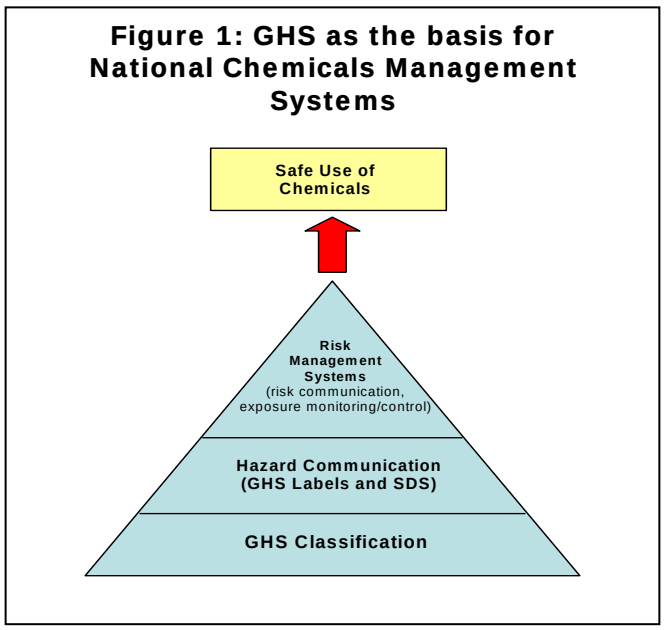
that countries can use as a basis for establishing comprehensive national chemical safety programs. The GHS is a logical and comprehensive approach for:

- Defining hazards of chemicals;
- Applying hazard criteria, using an agreed methodology, to classify chemicals; and
- Communicating hazard information on labels and Safety Data Sheets (SDS).

The GHS has the ultimate goal of ensuring that information on chemical hazards is made available to workers and consumers in a harmonized and comprehensible format (on labels and in SDS) in countries around the world. It represents an important effort to harmonize national systems worldwide, in order to improve chemical safety across all relevant sectors and enhance the protection of human health and the environment. Countries have been encouraged to use GHS as a key resource for activities on chemical hazard communication, in accordance with their own needs and capabilities.

1.1 The GHS as a Foundation for Chemical Safety

The GHS can play a central role in conveying information about chemical hazards to users for the entire chemical supply chain, provide all countries with a consistent means of classifying and labelling hazardous chemicals, and help to ensure that coherent information is provided on all imported and exported chemicals worldwide.



The GHS classification and hazard communication elements can be seen as the foundation of programmes to ensure the safe use of chemicals, as shown in Figure 1. The two key steps to ensure the safe use of chemicals are to 1) identify intrinsic hazard(s) (*i.e.* classification) and then 2) to communicate that information.

1.2 International Management of the GHS

Responsibility for the maintenance, updating and promotion of the GHS at the international level rests with the United Nations Subcommittee of Experts on the GHS (UNSCEGHS), and the United Nations Subcommittee of Experts on the Transport of Dangerous Goods (UNSCETDG). The UNSCETDG also continues to manage the United Nations Recommendations on the Transport of Dangerous Goods (UNRTDG).[2] The two groups are managed by an ECOSOC "parent" committee called the Committee of Experts on the Transport of Dangerous Goods and the GHS (UNCETDGGHS). This group is responsible for strategic issues and provides administrative and oversight functions. The UN Economic Commission for Europe (UNECE) provides the Secretariat functions for both instruments.

[2] For more information: http://www.unece.org/trans/danger/publi/unrec/rev16/16fword_e.html

Countries may also participate in the work of the UNSCEGHS and UNSCETDG as observers or apply to become full members of those subcommittees.[3] UNITAR and ILO are the designated focal points for capacity building on the GHS. At the national level, countries will need to identify a "competent authority" responsible for implementing the GHS and determining how the various elements of the GHS will be applied.

1.3 Benefits of the GHS

The current global situation is a patchwork of sometimes conflicting and diverse national and international requirements. Some countries – or certain sectors in some countries – completely lack any system at all. The result is increased costs to industry (needing to comply and re-label products for different markets) and government (needing to regulate), as well as potential increased risk to workers and consumers regarding the various hazards due to the differences in hazard communication methods. The GHS was created to harmonize the different or lacking hazard classification and communication systems within a country and between countries and regions.

Implementation of effective chemical hazard communication based on the GHS provides benefits for governments, companies, workers, and members of the public. The GHS has maximum value if accepted in all major regulatory systems for chemical hazard communication. If the GHS is implemented globally, consistent information will be communicated on labels and SDS with a number of benefits for human health and the environment, as well as for business and industry.

Global Benefits

Possible global benefits of GHS implementation include:

- Improved consistency and comprehensibility of hazard information to reduce harmful exposure to chemicals and chemical related accidents;
- Decreased global inconsistencies in the information provided to users;
- Greater confidence in the quality and content of chemical information received from other countries;
- Improved transparency for international trade in chemicals whose hazards have been identified on an international basis;
- More effective use of scarce resources (*e.g.*, reduced animal testing, avoiding the need for testing and evaluation against multiple classification systems, regulatory authorities not having to repeat the work of other authorities, etc.);
- Assurance of consumers and workers' "right to know" about the hazards and identities of chemicals; and
- Improved global environmental management and protection.

Benefits to Governments

The tangible benefits to governments include:

- Lower health care costs;

[3] Interested countries should contact the UNECE for further information at: www.unece.org/trans/danger/who.htm.

- Improved protection of workers and the public from chemical hazards;
- Avoiding duplication of efforts in creating national systems;
- Reduction in the costs of enforcement; and
- Improved reputation on chemical issues both domestically and internationally.

Benefits to Industry

Benefits to industry for adopting the GHS include:

- Safer work environments and improved communication with employees;
- Increased efficiency and reduced costs in compliance with hazard communication regulations;
- Maximization of expert resources with minimum labour and costs;
- Fewer accidents and illnesses; and
- Improved corporate image and credibility.

Benefits to Workers and Civil Society

Benefits of the GHS to workers and civil society include:

- Improved safety for workers and others through consistent and simplified communications on chemical hazards and practices to follow for safe handling and use;
- Greater awareness of hazards, resulting in safer use of chemicals in the workplace and in the home.

1.4 Contributions of the GHS to Key Agreed Sustainable Development Measures

Implementation of the GHS may also have broader benefits related to international and national issues of sustainable development. The United Nation's Millennium Development Goal Number 7 is to "ensure environmental sustainability." It was recommended that this be done, *inter alia*, by reducing "exposure to toxic chemicals in vulnerable groups" and to "improve frameworks for chemical management." Further, the World Summit on Sustainable Development in Johannesburg, South Africa[4] in 1992 includes the goal to, "*achieve by 2020 that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.*" Finally, Agenda 21, and Chapter 19 in particular, recognize the need to protect vulnerable groups from toxic chemicals.

These policy initiatives have resulted in binding conventions (see section 1.5), voluntary schemes (*e.g.*, GHS), capacity building efforts and global chemicals institutions. Along with providing a tool for achieving international sustainability goals, GHS implementation can also help to protect water supplies, ensure safe transport of chemicals and facilitate trade. Further information on the contributions of GHS to sustainable development can be found in Annex 2.

1.5 The GHS and other Chemical Management Initiatives

A number of international management efforts and agreements exist that are relevant to sound chemicals management and GHS implementation. A new policy framework for international

[4] www.unep.fr/scp/csd/wssd/postjoburg/wssdoutcomes.htm

action on chemicals management is the Strategic Approach to International Chemicals Management (SAICM).[5] The importance of implementing the GHS is recognised in the Overarching Policy Strategy (OPS) of SAICM. The GHS is also included as a SAICM work area in the Global Plan of Action, including eight distinct activities. The Rotterdam Convention, which allows countries to monitor and control trade in certain hazardous chemicals, has close links to hazard identification and communication issues and the GHS. The Convention requires countries to ensure that chemicals used for occupational purpose have a safety data sheet that follows an internationally recognised format. Additionally, the Stockholm Convention encourages parties to use SDS, reports and other means of communication. The Basel Convention, which deals with transboundary movement of hazardous waste, has established a correspondence working group with the UNSCEGHS in order to promote further synergies between the two bodies. The ILO Convention 170 also refers to the importance of evaluating chemical hazards and providing hazard information, especially in the workplace and ILO Recommendation 177 aims to protect workers against the risks associated with the use of chemicals in the workplace and include requirements for classification and labelling. Finally, the International Organisation for Standardization has developed a standard format for safety data sheets in order to establish uniformity. The ISO SDS has adopted the 16-heading format of SDS of the GHS. A document on the Stockholm, Basel and Rotterdam Conventions and their relation to the GHS called the "Guide to the Linkages Between the GHS and International Chemicals Agreements" is currently under development by UNITAR.[6] Further information on relevant international agreements can be found in Annex 3.

[5] http://www.saicm.org
[6] Please contact UNITAR for information on the status of development for this guidance.

2. Important Provisions of the GHS

The GHS document, known informally as "the Purple Book", outlines the provisions of the GHS in four parts and with a number of annexes. Currently the Purple Book is in its third edition, though the text is updated regularly with the agreement of the UN Subcommittee of Experts on the GHS. Therefore, new editions will continue to be published on a regular basis to reflect changes agreed within the UNSCEGHS. The full table of contents of the GHS (third revised edition) is included in Annex 4. The subsections below provide a brief overview regarding key provisions of the GHS. Further explanations of the Purple Book can be found in the UNITAR companion guide to the Purple Book, "Understanding the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)" available at: <www2.unitar.org/cwm/publications/cw/ghs/GHS_Companion_Guide_final_June2010.pdf> or upon request from UNITAR.

2.1 Scope

The GHS covers all hazardous chemicals. For hazard communication, the mode of application of hazard communication elements may vary by product category or stage in the life cycle. Pharmaceuticals, food additives, cosmetics, and pesticide residues in food are not covered by the GHS in terms of labelling at the point of intentional intake. However, these types of chemicals are covered where workers may be exposed, and, in transport if potential exposure warrants.

2.2 Data and Testing

Since the harmonised classification criteria of the GHS are developed based on existing data, using the GHS does not require re-testing chemicals for which accepted test data already exists. The information for classification may be obtained from tests, practical experience, literature, or the information found in other systems, such as that provided directly by industry or found in the international rules on the transport of dangerous substances. Therefore, in principle, the GHS does not require any additional testing and can be applied using existing data.

2.3 Classification Requirements

The GHS describes hazard classification as generally involving three steps:

1. Identification of relevant data regarding the hazards of a substance or mixture;
2. Subsequent review of data to ascertain the hazards associated with the substance or mixture; and
3. A decision on whether the substance or mixture will be classified as a hazardous substance or mixture and the degree of hazard, where appropriate, by comparison of the data with agreed hazard classification criteria.

The types of hazards classified by the GHS are divided into the classes shown in Box 1.

Box 1: Classification Hazard Classes in the GHS

Physical Hazards:

- Explosives
- Flammable gases
- Flammable aerosols
- Oxidizing gases
- Gases under pressure
- Flammable liquids
- Flammable solids
- Self-reactive substances and mixtures
- Pyrophoric liquids
- Pyrophoric solids
- Self-heating substances and mixtures
- Substances and mixtures which, in contact with water, emit flammable gases
- Oxidizing liquids
- Oxidizing solids
- Organic peroxides
- Corrosive to metals

Health Hazards:

- Acute toxicity
- Skin corrosion/irritation
- Serious eye damage/eye irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity-single exposure
- Specific target organ toxicity-repeated exposure
- Aspiration hazard

Environmental Hazards:

- Hazardous to the aquatic environment
- Hazardous to the ozone layer

2.4 Chemical Hazard Communication Tools Included in the GHS

Once a substance has been classified (*e.g.*, substance X is found to be toxic or flammable), its hazards need to be communicated to target audiences. The main tools of chemical hazard communication are *labels* and *safety data sheets* (SDS). These tools contain hazard information in the form of hazard pictograms, signal words and other communication elements.

Labels

A label is an appropriate group of written, printed or graphic information elements concerning a hazardous product, selected as relevant to the target sector(s), that is affixed to, printed on, or attached to the immediate container of a hazardous product, or to the outside packaging of a hazardous product. It is designed to provide information on the inherent dangers of that chemical to persons handling or using the chemical. The label is the basic tool to keep the user informed of the hazards posed and basic safety precautions. The label can be regarded as a snapshot of the chemical hazard(s) to be used as a primary message or alert for the worker who is then directed to the SDS for more detailed information. This pattern should be reinforced through training in the hazard communication system. Finally, in communicating the potential hazard of consumer products, the label plays the major role in the provision of information. It is designed to provide the user with information about the potential physical, health and environmental chemical hazards of the product and basic advice on using the chemical safely.

Safety Data Sheet (SDS)

The chemical supplier (*e.g.*, a manufacturer, importer or formulator) should be able to provide detailed information about the substance in a document called the *safety data sheet (SDS)*. In certain countries, the supplier has the obligation to provide information in a SDS on chemicals' physical, health and environmental hazards, labelling, safe use and handling, among other things. SDS have been prepared on many dangerous substances and preparations and should go together with the product to the user in the workplace.

The SDS should provide comprehensive information about a chemical substance or mixture for use in a workplace setting. It can be used by both employers and workers as a source of information about hazards, including environmental hazards, to obtain advice on safety precautions, and most importantly to identify appropriate risk reduction messages for the use in question. Advice by the supplier on the safe use of the chemical by the user requires information on the workplace situation of the user and expected exposures. The information in a SDS acts therefore as a reference source for the effective management of hazardous chemicals in the workplace.

The SDS is product related and, sometimes, may not be able to provide specific information that is relevant for a specific use. In other cases the SDS may be specific and detailed for a particular use. The SDS is a resource that enables an employer to undertake worker and environmental protection activities, including training, that are specific to the individual workplace.

In the context of the GHS, the SDS should be produced for all substances and mixtures that meet the criteria for physical, health or environmental hazards under the GHS.

2.5 Visual Elements of Hazard Communication

GHS labels and SDS contain pictograms that represent the hazard class and can also indicate the category of a substance or mixture. Box 2 provides a table of pictograms with corresponding hazard classes.

Box 2: GHS Pictograms and Hazard Classes		
		
• Oxidizers	• Flammables • Self-reactives • Pyrophorics • Self-heating • Emits flammable gas • Organic peroxides	• Explosives • Self-reactives • Organic peroxides
		
• Acute toxicity (severe)	• Corrosive to metals • Skin corrosion • Serious eye damage	• Gases under pressure
		
• Carcinogenicity • Respiratory sensitization • Reproductive toxicity • Specific target organ toxicity (repeated) • Germ cell mutagenicity • Aspiration hazard	• Aquatic toxicity (acute) • Aquatic toxicity (chronic)	• Acute toxicity (harmful) • Skin/eye irritation • Skin sensitization • Specific target organ toxicity (single) • Hazardous to the ozone layer

2.6 Capacity Building Provisions of the GHS Purple Book

The Importance of Comprehensibility

The Purple Book notes in chapter 1.4.4 that comprehensibility of the information provided has been an important issue in developing the system. The purpose of providing chemical hazard information is to encourage the user to follow appropriate precautionary measures and avoid the occurrence of an adverse effect from handling or using the chemical. Comprehensibility refers to the ability of the individual reading a label, warning, or safety data sheet to understand the information sufficiently to take necessary action. Comprehensibility is different from 'readability' because the latter is simply a measure of the sophistication of the written material, while the former is a measure of how well the receiver of the information understood it. For example, a label should be developed with a specific target audience in mind, given differences in education levels and experiences of potential chemical users.

Achieving comprehensibility does not ensure that the informed individual will take the actions prescribed in the warning or label. The reason is that behaviour is affected by a complex mix of attitudes, experiences, motivations and potential consequences that are specific to each individual in a particular situation. Moreover, users of chemicals in developing countries may have very different cultural backgrounds or socio-economic conditions from those countries where many hazard communication tools have been developed, and thus particular attention should be paid to the use of appropriate tools and training. Further information on conducting comprehensibility testing is found in section 7.4.

Training and Awareness Raising to Ensure Effective Hazard Communication

In addition to providing labels and SDS, a number of supportive measures need to be considered and implemented to ensure the success of an effective chemical hazard communication system. For example, the GHS refers in chapter 1.4.9 to the importance of training all target audiences to recognize and interpret label and/or SDS information, and to take appropriate action in response to chemical hazards. Training requirements should be appropriate for and commensurate with the nature of the exposure. Key target audiences include emergency responders, those using chemicals in the workplace, involved in label and SDS preparation, and the transport and supply of hazardous chemicals and the general public. Consequently, training requirements for producers and users will differ.

Important to remember!

Any GHS capacity building or implementation efforts must include awareness raising and training elements in order to inform stakeholders about the importance of the GHS and chemical safety. In UNITAR/ILO GHS project countries, partners are required to engage relevant business and industry, and civil society groups to promote understanding of GHS elements.

Consumers should be subject to *educational programmes* regarding the interpretation of label information on products they use. Other tools, such as *awareness raising* campaigns, the use of posters, brochures and the media, can all assist in ensuring that the chemical hazard communication process improves chemical safety.

PART B COORDINATING NATIONAL GHS IMPLEMENTATION

Part B of this document introduces the key sectors affected by GHS implementation at the national level (*i.e.* industrial workplaces, agriculture, transport, and consumer products) as well as important actor groups involved in, and responsible for, GHS implementation (*i.e.* government, business and industry, and civil society). Further, issues related to coordination of stakeholders and activities are also addressed.

3. Considerations for National GHS Implementation

Although the GHS is a tool that harmonizes chemical classification and hazard communication worldwide, implementing the GHS is likely to have different implications for different countries, depending on a number of factors, such as existing industrial infrastructure, legal frameworks and implementing capacities.

3.1 Differences in Industrial Development

A non-chemical producing country would not need to develop the depth of GHS implementing capacity in comparison to a highly industrialized country. For example, significant progress towards GHS implementation can already be made by introducing import control measures requiring GHS-based labelling and SDS, as well as occupational GHS requirements. A country with major chemical production capacities, however, would need to develop a more comprehensive approach to GHS implementation, including development of capacity for hazard identification and hazard assessment. Review of a National Profile and preparing a situation analysis would assist in the process to understand the level of complexity that may be required.

3.2 Differences in Existing Capacity Across Countries

For a country which has no national chemical hazard communication system in place, implementation of the GHS provides an opportunity for (and may even require) development of a basic infrastructure for chemical hazard communication, including development of basic legislation for classification, labelling, SDS preparation, training, etc. A country with an existing regulatory scheme for classification and labelling would need to align legal criteria for classification with criteria provided by the GHS, and making sure that requirements for preparing SDS and labels are GHS-compatible.

3.3 Differences in Capacity Across Sectors

Existing capacities for GHS implementation may, within the same country, be different in each of four sectors identified in the scope of the GHS. For example, a country may have a chemical hazard communication system in place for the transport sector, while relevant requirements for consumer product chemicals may be lacking. Thus, a differentiated approach is warranted where each of the four sectors affected by the GHS are addressed separately, while not ignoring important potential cross-sectoral issues.

3.4 Engagement of Relevant Institutions and Stakeholders

Each of the four sectors affected by GHS implementation often have different institutions and stakeholders. Thus addressing sector-specific considerations would involve identification of the appropriate actors in government, business and industry and civil society. For example, Ministries of Transport are typically taking the lead for the transport sector, while Ministries of Health often are concerned with the consumer product sector. Similarly, the chemical industry is sometimes divided into associations that deal with industrial chemicals and agricultural chemicals respectively. Civil society groups, including labour unions, consumer groups and NGOs can also be divided by sectors, or may cover multiple sectors. Thus, careful attention should be given to identifying the appropriate actors for each of the sectors affected by the GHS.

4. Key Sectors Affected by GHS Implementation

The provisions of the GHS affect four key sectors at the national level: (1) industrial workplaces, (2) agriculture, (3) transport, and (4) consumer products. The following sections provide an overview of each of the four sectors from a GHS perspective. Each section introduces the targets groups and objectives of chemical hazard communication in the respective sector, summarizes the tools used to communicate the hazards, discusses government departments typically involved in regulatory activities and references international agreements relevant to GHS implementation, where applicable.

4.1 Industrial Workplace

Chemicals produced in factories and used in workplaces are a central component to many countries' economies. However, they may pose dangers to those at risk of exposure, whether directly in the factories or in surrounding communities, and may be a hazard to the environment if released. Workers in factories, storage facilities, construction sites, drilling sites and at small and medium sized enterprises (SMEs) can be at risk of exposure to chemical hazards, for example, through a leak from barrels in storage or through airborne contamination in a factory using a particular chemical to produce another product.

The objective of hazard communication in this sector is therefore to ensure that appropriate actions are taken to provide information about these hazards and train target groups in appropriate precautionary behaviour. Employers and workers need to know the hazards specific to the chemicals used and or handled in the workplace, as well as information about the specific protective measures required to avoid the adverse effects that might be caused by those hazards. The tool most commonly used for providing this information is the label. However, the label is not the sole source of this information. It is also available through the SDS and workplace hazard and risk management systems. Workplace hazard and risk management systems should also provide training in hazard identification, precautionary measures and the use of SDS. The nature of training provided and the accuracy, comprehensibility and completeness of the information in the SDS may vary. However, compared to consumers for example, workers can develop a more in-depth understanding of hazard symbols and other types of information when properly trained.

Governments usually have the role of passing legislation to facilitate chemical hazard communication, usually via labour laws or standards, although legislation may also exist through laws relating to industrial facilities. Some countries may have also developed systems based upon other international classification and hazard communication systems, for example, via ILO Convention 170 and Recommendation 177 concerning safety in the use of chemicals at work. Key ministries typically involved include Ministries of Labour, Trade or Industry. The private sector, such as the companies producing chemicals or managing factories that use them, are responsible for ensuring proper classification and use of labels and SDS, as appropriate, and training workers that may be exposed. Labour unions may have activities related to ensuring companies are providing appropriate information and they may conduct awareness raising and training for workers.

4.2 Agriculture

Pesticides are in widespread use around the world and may pose hazards to those producing or using them, as well as to the environment in which they are used. Farmers and farm

workers are at risk from exposure through the use of different agricultural chemicals, such as pesticides and fertilizers. The World Health Organisation (WHO) places the total cases of pesticide poisoning in the agricultural sector at between 2 and 5 million each year, of which 40,000 are fatal.[7] Barrels containing pesticides, for example, may not be properly labelled (or repackaged without labelling) or the hazard information on the label may not be comprehensible due to linguistic reasons. Distributors or farmers spraying crops with a pesticide may not have access to, or understanding of, an SDS on that particular chemical.

The objective of hazard communication in the agriculture sector is therefore to provide appropriate information related to chemicals (pesticides, insecticides, etc.) used in this sector and to relevant target audiences (*e.g.,* farmers). The key tool used to communicate hazard information in the agriculture sector is the label. As distributors may repackage pesticides, ensuring that labels are consistent at all stages is also important. As with all sectors, training on the proper understanding and use of the label information and the chemicals is important.

Governments usually have the role of regulating chemicals use in the agriculture sector via legislation or standards related to use of pesticides, insecticides, etc. or pest management programmes. Government agencies may also provide guidance on various issues such as safe practices (*e.g.,* for pesticide storage and disposal on farms). In some federal systems, enforcement of relevant laws may be a state of provincial responsibility. Some countries may use existing international standards as the basis for their national codes and regulations, for example the WHO Recommended Classification of Pesticides by Hazard and Food and Agriculture Organisation (FAO) Code of Conduct on the Distribution and Use of Pesticides (and Guidelines on Good Labelling Practice for Pesticides). Industry, often pesticide industry associations and individual companies that produce pesticides and other chemicals used in the agriculture sector, is responsible for appropriate labelling following national laws and standards and may provide training on the proper use of these products. Agricultural workers unions, and in some cases NGOs (*e.g.,* concerned about negative side-effects of pesticides on the environment), may undertake activities to train farmers and farm workers on the safe use of pesticides and undertake awareness raising campaigns on the effects of pesticide use on the water supplies or plants, animals and humans that may be exposed unintentionally.

4.3 Transport

Chemicals and products containing chemicals are transported around the world via road, rail, water and air and may pose a hazard not only to those directly involved in their transport, but also to communities on the transit route and the environment in the case of an accident. The objective of hazard communication is therefore to ensure that those involved in the transport sector have information concerning general safe practices that are appropriate for transport situations. For example, a driver will have to know what has to be done in case of an accident irrespective of the substance transported (*e.g.,* report the accident to authorities, keep the shipping documents in a given place). Drivers require information concerning specific hazards in the event of an accident and additional information if they also load and unload packages or fill tanks. Workers who might come into direct contact with dangerous goods in transit, for example on board ships, require detailed information. In all cases, labels, placards, transport documents and SDS are key tools.

[7] Quoted in V. Forastieri, "Challenges in providing occupational safety and health services to workers in agriculture", *African Newsletter on Occupational Health and Safety*, vol. 11, no. 2 (August 2001): p. 34.

The transport sector has long been a focus of international efforts on hazard communication, primarily through the UNSCETDG. This body elaborated the first internationally recognised classification and labelling system for the purpose of transporting dangerous goods, the UN Recommendations on the Transport of Dangerous Goods (UNRTDG). For the transport sector, the GHS is implemented in the form of the UN Recommendations on the Transport of Dangerous Goods, UN Model Regulations. This means that the implementation of the GHS is through implementation of the UNRTDG. The UNRTDG model regulations are updated regularly and are currently in their 16th revised edition (this edition incorporates the third revised edition of the Purple Book).

The UNRTDG caters to a wide range of target audiences, although workers involved in transporting chemicals and emergency responders are the principal ones. Containers of dangerous goods will be marked with pictograms that address acute toxicity, physical hazards, and environmental hazards. The elements of the GHS that address these hazards, such as signal words and hazard statements, are not expected to be adopted in the transport sector.[8]

Governments typically regulate hazardous chemicals in the transport sector via specific regulations related to the transport of dangerous goods, and the key authority is usually Departments of Transport. Some countries also base national regulations on existing national standards such as the UNRTDG, International Maritime Dangerous Goods Code, European Agreements Concerning the International Carriage of Dangerous Goods by Road (ADR) or by Inland Waterways (ADN), International Air Transport Association (IATA) Dangerous Goods Regulations, or the International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods By Air.

Industry associations for specific transport modes (*e.g.*, trucking associations) may provide members with information about compliance with national regulations and training in the application of these regulations. Unions representing transport workers may monitor the training of workers (including emergency responders) regarding relevant hazard communication tools or community groups in transit areas may conduct awareness campaigns regarding precautions to be taken in the case of an accident or emergency. [9]

4.4 Consumer Products

Consumers are exposed to a wide variety of hazardous chemicals in their daily lives, such as certain bleaches, paints, dyes, garden pesticides and cleaning products. Children may also be exposed to chemical hazards via products used in the home. Ensuring the provision of comprehensible information on consumer products so that they are used appropriately is the objective of hazard communication in this sector. In the consumer sector the label in most cases is likely to be the sole source of information readily available to consumers. The label, therefore, needs to be sufficiently clear and relevant to the use of the product. Moreover,

[8] For more information, visit the RTDG website at: http://www.unece.org/trans/danger/publi/unrec/rev16/16fword_e.html .

[9] The North American Emergency Response Guidebook (ERG 2008) was developed jointly by Canada, the US and Mexico for use by fire-fighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving dangerous goods. It is primarily a guide to aid "first responders" in quickly identifying the specific or generic hazards of the material(s) involved in the incident, and protecting themselves and the general public during the initial response phase. For further information, please visit: www.tc.gc.ca/eng/canutec/guide-menu-227.htm.

consumer education is more difficult and less efficient than education for other audiences. Providing sufficient information to consumers in the simplest and most easily understandable terms presents a considerable challenge. The problems of making readily comprehensible information available to consumers are also made more difficult by the wide range of chemicals and uses in the home. Some products contain many dozens of chemicals all with different properties. The issue of comprehensibility is therefore of particular importance for this sector, since consumers may rely mainly on label information and would benefit from education and awareness.

Government has the responsibility to regulate consumer products, sometimes through the use of general consumer product legislation or specific regulations for food, drugs and cosmetics. Specific regulatory agencies (*e.g.*, consumer product safety commissions) or Ministries of Health may be empowered and responsible for this sector. The GHS recognizes that some competent authorities may allow assessments of the risk or likelihood of injury when determining whether to convey chronic health hazards on consumer product labels. Annex V of the Purple Book discusses this possible narrow exception to labelling based on hazard, and the general principles that may be used to guide this process.

Companies that produce consumer products that contain hazardous chemicals are required to label their products in line with national regulations; specific consumer product industry associations (*e.g.*, representing soaps and detergent products or paints or printing substances) may provide information about compliance to member companies or develop consumer awareness materials regarding appropriate use of their products. Consumer protection associations, environmental NGOs, women's and children's advocacy groups and other civil society organizations may undertake awareness raising and education campaigns about the safe use of consumer chemical products or lobby governments and industry regarding the status of legislation or providing information about these products.

5. Key Actors Involved in GHS Implementation

Implementation of the GHS and sound chemical hazard communication requires initiatives, activities and capacities for three distinct actors: government, business and industry, and civil society. Each of these groups has their distinct roles and responsibilities, as briefly outlined below. Through a partnership approach their activities can be made complimentary and thus facilitate the coherent implementation of the GHS in all four sectors.

5.1 Government

Government is typically responsible for establishing and maintaining an effective legal and institutional infrastructure for chemical safety. This can include laws covering all aspects of the GHS, including classification, hazard communication (labels and safety data sheets) and training and enforcement, and the administrative and institutional infrastructure to implement and enforce these laws or regulations, including the role of customs and inspectorates (*e.g.*, for worker health and safety, the environment, farms, transport, consumer safety, etc.). In particular, governmental authorities need to determine the obligations for classification and labelling throughout the supply chain and for the various sectors (which may have different requirements). This could include, for example, ensuring legislation specifies how to classify, who is responsible for classification and outlining responsibilities throughout the supply chain or providing labelling requirements for import or information databases on chemicals placed on the market. Governments also typically consult business and industry, and civil society on their proposals for legislation, implementation and monitoring, such as via public hearings or "comment periods", or inform the public via education and outreach programmes.

A number of types of government bodies are typically involved in GHS implementation. While some ministries are particularly interested in a specific sector (*e.g.*, the Ministry of Transport is usually responsible for chemical hazard communication in the transport sector), other governmental partners may have an interest in more than one sector (*e.g.*, Ministries of Industry, Health, Environment, Customs Authorities, International Affairs, etc.). Others, such as the Coast Guard (if it exists), Ministries of Fisheries or Natural Resources, and Research Institutes or occupational safety and health centres within government may also make a strong contribution.

In some countries, sub-national governments (*e.g.*, local/regional/provincial) or regulatory agencies may also participate as partners. For example, if worker safety training is typically the responsibility of a provincial regulatory agency, then the national government may be unable to develop a successful GHS implementation strategy without the cooperation and participation of these entities.

5.2 Business and industry

Business and industry have the responsibility for applying the classification and labelling requirements for chemicals at the workplace and throughout the supply chain or life cycle. Companies that produce chemicals and/or place them on the market therefore need to ensure that they have the necessary expertise available to identify and collect information on the chemicals they are responsible for, to apply the classification criteria and to develop labels and safety data sheets. Manufacturers and suppliers are responsible for providing this information. Distributors may repackage products and therefore need to ensure the appropriate continuity of labelling.

Employers and companies (both producers and users) also have a responsibility to train their staff in the correct interpretation and use of applicable hazard communication tools, such as labels and SDS. Companies will also need to have in place systems to collect information from the supply chain (*e.g.*, on the effects of particular chemicals on workers) that may lead to revised hazard communication efforts and recommendations for risk management interventions.

Companies also often have a wider responsibility to ensure the safe use of the chemicals they produce or place on the market. This may be a result of "corporate social responsibility", product stewardship, liability for damage to human health and the environment, or the application of industry standards such as Responsible Care®. Such a responsibility may mean that information on the effects of, and exposure to, chemicals, in addition to that already available, may need to be generated. Any additional data should of course be applied to the various hazard communication tools covered by GHS.

Some groups in business and industry that may be involved with GHS implementation include, industrial chemicals associations, pesticides producers associations, transport industry associations, consumer product associations, major companies, including multi-national corporations, and user industries (*e.g.*, paint, plastics, detergents, etc).

SMEs may have special challenges in implementing the GHS, due to limited resources for changing over to a new system. However, in the long run it is expected that the GHS will provide a cost efficient means of hazard communication. Governments and industry associations may wish to develop specific programmes to support GHS implementation in SMEs.

Case study: Stakeholder Involvement in the Philippines

In the Philippines, a number of key business and industry and civil society groups are actively involved in GHS awareness raising and training, including:

- Philippines Chemical Industry Association (SPIK)
- Croplife
- Pesticides Action Network
- Trade Union Congress
- Nationwide Association of Consumers

5.3 Civil Society

Civil society groups represent the interests of individuals joined together for a common purpose, such as environmental or human health protection. While the role of civil society groups is less clearly defined in implementing the GHS, they play an integral part in capacity building. In the context of the GHS, these groups represent individuals who are exposed to chemicals and affected by ineffective chemical hazard communication. Thus, civil society should play an important role in GHS capacity building and implementation.

Civil society groups that may be interested to participate in GHS capacity building represent a broad range of constituents from labourers, the poor, women, disabled, consumers, the environment, etc. These people and issues are represented by environmental NGOs, consumer or human health advocacy groups, and labour unions. Other groups, such as women and children's groups, academia, or community organizations may also be interested in participating in GHS implementation activities as a means to achieve their objectives.

Civil society groups have a key role in gathering information on the current status of hazard communication among constituents and other members of civil society. They can further influence the development of a GHS implementation strategy by informing government and industry decision makers on the priorities of the people they represent. This can be through working with government to shape appropriate legislation for implementing the GHS or demanding more compliance from industry. Through training and awareness raising activities, civil society can contribute to on-the-ground implementation of the GHS.

For organisations, involvement in the GHS does not necessarily require the creation of a separate portfolio on chemical issues and chemical hazard communication but can simply involve the integration of the GHS into their present objectives (*e.g.*, protecting the environment, women's support, health care). GHS issues are relevant for many of the issues and topics that are already priority areas for organizations. An NGO working on HIV/AIDS could see the promotion of chemical safety as a way to protect HIV/AIDS individuals' where health is compromised by exposure to hazards chemicals either in the work place or as a consumer, thus potentially increasing the negative effects of HIV/AIDS. In academia, many of the departments and research divisions of universities and institutes are already related to the GHS, including chemistry, agriculture, environmental studies, international affairs, public policy and health, law and business. Through integration of the GHS into their areas of focus, academia can help to educate not only the opinion makers or leaders of tomorrow, but can also help produce research and information that can directly influence GHS implementation in all the four sectors.

Workers are especially important in GHS capacity building because they are often the first to feel the ill effects of hazardous substances. They are a crucial source of information about the workplace and have direct knowledge of the actual situation on the shop floor, on farms and along transport routes. Workers have first hand experience in workplace practices and problems related to the use of hazardous chemicals. Labour organisations represent workers and already play a crucial role in protecting and improving working conditions including health and safety in the workplace. They articulate the concerns and issues of workers and are accountable to their members. Unions also play an important role in integrating sustainable development with occupational health and safety for workers and to strengthen the basis for promoting forms of Decent Work[10] and the well-being for workers and communities.

As one objective of the GHS is to improve chemical safety, labour organisations have an important role to play in the process of GHS awareness raising and implementation. Labour organisations operate at enterprise, industrial, national, regional and international levels and interact with key social partners (government, and business and industry). However, labour organisations will intervene and participate in the implementation of GHS in their respective countries in different ways depending on their own priorities, capacity and resources. The different ways in which labour organisations and the respective national labour and occupational health and safety law are structured will also influence the approaches adopted.

[10] www.ilo.org/public/english/decent.htm

6. Organizational Considerations

Countries undertaking GHS capacity building and implementation should consider the most effective means for coordinating the various activities and efforts necessary for introducing and integrating the GHS into the national system. This section describes the formation of a National GHS Coordinating Committee, its function, and potential structures to facilitate GHS implementation.

6.1 National GHS Coordinating Committee

Successful implementation of the GHS can be facilitated by effective coordination of relevant sectors and stakeholders and the activities in which they are involved. This can reduce duplication of efforts and serve to improve consistency and coordination in overall chemical hazard management in a country. Because of the number of people potentially involved in GHS implementation, establishing a coordinating infrastructure is a helpful way to frame the development of a GHS implementation strategy. This infrastructure serves to ensure that communication is ongoing between the actor groups (government, business and industry, and civil society); across the four sectors (including consideration of cross-sectoral issues); and between stakeholders and the national coordinating committee.

Key to the success of the GHS implementation strategy is ensuring sound coordination of the many tasks and activities involved in strategy development. Therefore, it may be useful to form a national GHS coordination or implementation committee (or designate an existing committee dealing with chemicals management to include GHS implementation in their work programme). The committee can include representatives of stakeholder groups and government ministries representing the four sectors (industrial workplace, agriculture, transport and consumer products), as well as other related ministries essential to the implementation process (such as environment, foreign affairs, health, standards, finance, trade and customs among others). The exact composition of the committee will depend on each country's particular circumstances.

The committee should meet early on in the implementation strategy development process and among its first orders of business draft and reach agreement, as appropriate, on tools that can guide their work, including:

- Terms of Reference (TOR), including guidance on how decisions will be made; and the roles, commitment and expectations of the various participants;
- A work plan for the process, outlining project activities, milestones and dates; and
- A budget for the development of implementation strategy.

To aid in national coordination, countries might find it useful to identify a lead institution to act as the coordinating agency for GHS implementation activities. The lead institution usually comes from one of the government ministries representing the four key sectors, or may be a separate ministry or agency that can act as a coordinator.

The coordinating institution may perform the following types of functions:

- Convene meetings of the GHS coordinating or implementation committee;
- Provide secretariat support for activities and sectoral working groups; and

- Coordinate participation of national representatives at GHS-relevant regional and international meetings, as appropriate.

In addition to a main GHS coordinating committee, it may be useful to establish a number of subcommittees or groups to address particular needs in GHS capacity building within the sectors (industrial workplace, agriculture, transport and consumer products), actor groups (government, business and industry, and civil society) or focusing on cross-sectoral issues. This could include, for example, subgroups focusing on legislation, comprehensibility, training and awareness raising, etc.

6.2 Sectoral Working Groups and Stakeholder Committees

In order to facilitate the discussion of sectoral considerations, countries may want to consider establishing sectoral working groups. Sectoral groups would specifically focus on the implementation of the GHS in the four key sectors affected by GHS.

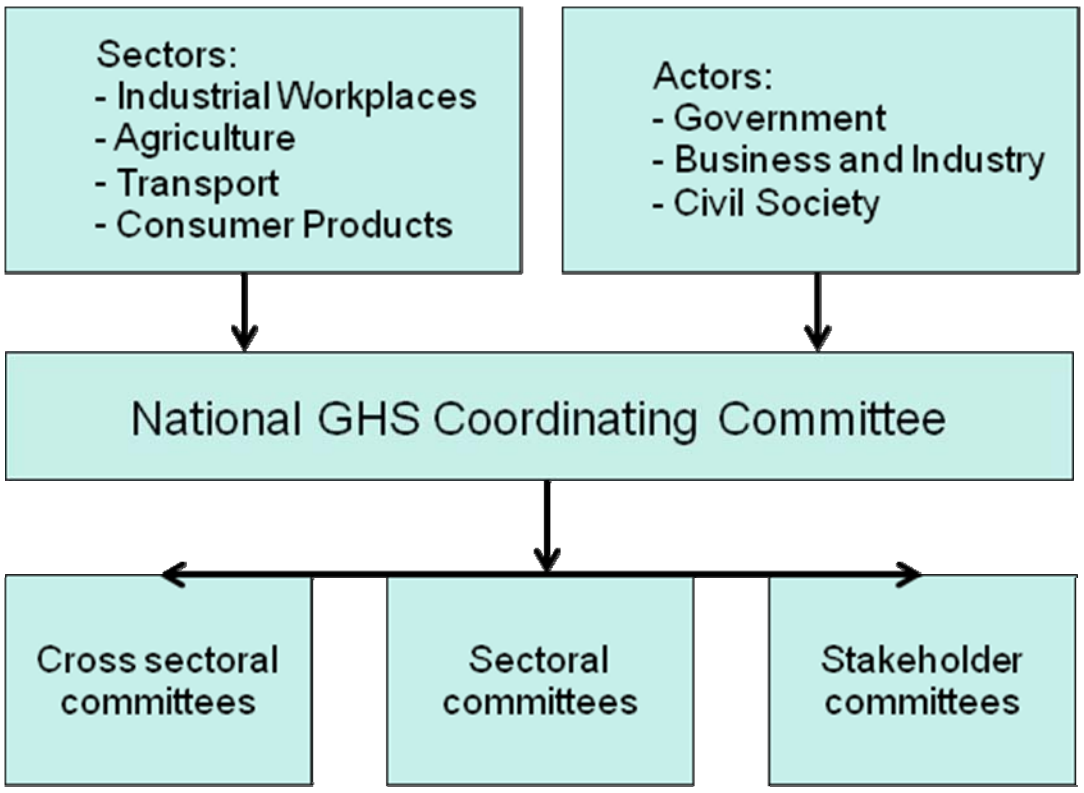
Further, committees can be developed to address the particular needs of non-governmental stakeholders. For example, these committees could work to develop strategies for the engagement of civil society and industry groups through awareness raising, training and the organisation of relevant stakeholder workshops. Both sectoral work groups and stakeholder committees are usually comprised of representatives from a range of sectoral and actor groups.

6.3 Coordinating Cross-Sectoral Issues

Some important issues in the implementation of GHS cut across the four sectors. These include, for example: comprehensibility testing, legislation, technical training and awareness raising. Countries may chose to address these within the National Coordinating Committee or form specific working groups or committees. The exact way of addressing these issues will depend on the individual needs and circumstances of a country.

Figure 2 depicts a possible organizational chart for GHS coordination. Countries may want to consider other organizational arrangements to suit their national needs and circumstances.

Figure 2: National GHS Coordinating Structure



6.4 Ensuring Effective Stakeholder Participation

Involving key non-governmental stakeholders should be given special emphasis in GHS planning and implementation, as it is of practical relevance (since their actions and commitment will be essential to the implementation and success of the implementation strategy). The types of business and industry and civil society groups involved, as well as the type of involvement, will vary depending on a number of factors, including the nature and context of the issue, the time frame for developing the strategy, the legal mandate within which the lead organization(s) operates, and the availability of resources. It is advisable that countries think through, up front, how to best incorporate multi-stakeholder involvement.

The following are a few questions to consider when addressing the issue of stakeholder involvement:

- What types of groups are relevant for involvement?
- What is the nature of participation by business and industry, and civil society?
- What types of resources are available for supporting the involvement of these groups, in particular those that do not have sufficient resources?
- How will lead organizations/points of contact be identified?

Stakeholders could be involved in GHS activities, for example, through:

- Information and awareness raising meetings and campaigns

- Industry or civil society-specific workshops
- Provision of or participation in training and information-sharing
- Participation in committees
- Reviewing and commenting on draft policies and legislation
- Developing GHS and/or chemicals safety networking and alliances
- Involvement in the UN Sub-committee of Experts on the GHS
- Ensuring labels are appropriate for target populations
- GHS in the context of right-to-know

Case Study: Coordinating National GHS Implementation in Brazil

On 26 June 2007, the President of the Republic of Brazil signed a Decree formalizing a national GHS Working Group ("GT-GHS-Brasil"), which is the responsible body for implementation of the GHS in Brazil. This group is made up of more than 40 governmental and non-governmental institutions from Ministries, Agencies, Institutions, Industry and Foundations. The GHS Working Group includes sub-groups on Confidential Business Information, Publicity, Implementation, and Training. Brazil also communicates GHS implementation activities with the Mercosur Ad Hoc Group on Chemicals within Sub-Group 6 in the Environmental Area.

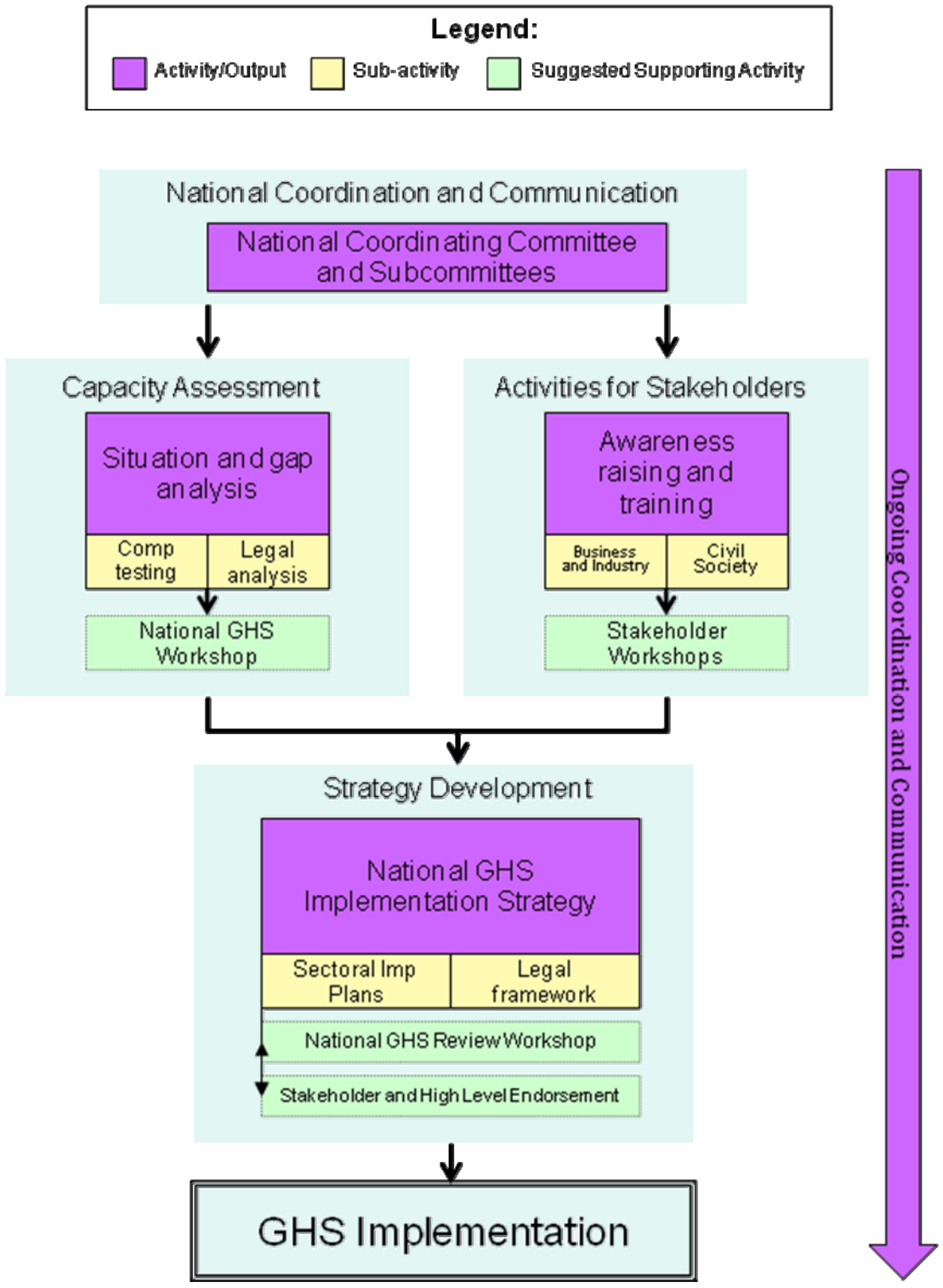
PART C DEVELOPING A NATIONAL GHS IMPLEMENTATION STRATEGY

Part C of the guidance document provides suggestions to countries for developing a National GHS Implementation Strategy (NIS). Following an introduction to the proposed methodology, suggestions are provided for organizing the strategy development process at the national level, featuring questions considered relevant for preparing a situation and gap analysis and issues that countries may want to consider in preparing the National Implementation Strategy.

The process of developing a National GHS Implementation Strategy comprises a number of activities. Taking into consideration the discussions in Parts A and B, a NIS features – for each of the four sectors concerned – actions that will be undertaken by government, business and industry, and civil society respectively to ensure effective GHS implementation.

In order to achieve this goal, as a first activity, stakeholders collect information about their existing GHS-related infrastructure and activities and prepare a situation analysis covering all four sectors. This baseline information allows the comparison of existing capacities against what should be in place for effective GHS implementation – the gap analysis. A gap analysis, in turn, serves as the basis for identifying required action to be included in sectoral implementation plans. These analyses should be complimented by comprehensibility testing and a legal analysis. The results of these activities can then be presented and discussed, for example, at a National GHS Workshop. Further training and awareness raising activities can be organised for stakeholder groups. Finally, a NIS report can be completed which summarizes all agreed actions in government, business and civil society, resource issues, etc. A flowchart of these activities is provided in Figure 3. GHS implementation can be considered an ongoing process, requiring resources, monitoring and evaluation to ensure that planned activities are carried out and that the GHS implementation process is constantly being updated based on the current situation within a country. This cycle is represented in Figure 5.

Figure 3: Overview of GHS Implementation



7. Assessing National Capacity for GHS Implementation

An important initial step when preparing a National GHS Implementation Strategy involves undertaking a GHS situation and gap analysis. Information should address existing activities and capacities in government, business and industry and civil society, as appropriate, and for all four sectors: industrial workplaces, agriculture, transport and consumer product chemicals.

Due to the importance of legislation in GHS implementation, a full legal analysis should also be conducted to assess the existing legal framework related to the GHS within a country. This can be considered a separate activity from the situation and gap analysis, but supports the overall understanding of the current status. Further information on conducting a legal analysis is found in section 7.5.

7.1 Reviewing the Current Situation

The GHS Situation Analysis is conducted to collect baseline information and document the existing national infrastructure and capacities for chemicals classification and hazard communication. The following sections highlight information to be included in the situation analysis. These sections are divided by actor group (government, business and industry, and civil society). Guidance questions are provided for each topic area to assist in gathering the necessary information and to ensure that the key issues are addressed. Some questions may not be relevant for all countries (*e.g.*, for countries that do not produce chemicals). Countries should also feel free to determine and address other questions not listed here.

Box 3 provides a list of potential existing sources of information that could possibly be used as a starting point for analysis.

Box 3: Using Existing Information for Preparing a GHS Situation Analysis

A number of resources may already exist which could provide useful information for developing the GHS Situation Analysis.

1) **A National Profile** provides a comprehensive overview and assessment of a country's existing national legal, institutional, administrative and technical infrastructure related to the sound management of chemicals in the context of Chapter 19 of Agenda 21. Countries all over the world have prepared National Profiles with the involvement of a wide range of national stakeholders, following the recommendations in the UNITAR/IOMC National Profile Guidance Document. Countries interested in participating in a UNITAR project to develop their own National Profile, or wishing to view examples from other countries, can find more information at the following address: www.unitar.org/cwm/nphomepage/np3.aspx.

2) **National Implementation Plans** of the Stockholm Convention provides a framework for a country to design and implement, in a systematic and participatory way, the various measures necessary to meet the obligations of the Convention. For more information on how to access UNITAR assistance in this area, please contact your GEF Implementing Agency and/or visit the UNITAR site on Persistent Organic Pollutant (POPs) activities at: www.unitar.org/cwm/pops/nip.

3) **National SAICM Capacity Assessments** can be considered a more general version of the GHS Situation and Gap Analysis in that it provides overall information on chemicals management in the context of SAICM. Relevant information can be extracted focusing specifically on chemical hazard classification and communication. Further information on SAICM activities can be found at: www.unitar.org/cwm/saicm/capacity-assessment.

4) **SAICM Implementation Plans** serve as a tool to provide an infrastructure for the expeditious implementation of SAICM. The document addresses the needs of each stakeholder for overall implementation and outlines a range of actions needed for successfully integrating SAICM into national, regional or international chemicals management. In many cases, parties will have identified the GHS as a major priority in the plan. Guidance on developing a SAICM Implementation plan can be found at: www2.unitar.org/cwm/publications/cw/inp/Developing_SAICM_Implementation_Plans_3Nov09_2009_edition_Final.pdf.

Background Information

An introductory section of the situation analysis provides some general background information related to issues of chemical use and hazard communication within the framework of a national infrastructure. It can be important to have an understanding of these issues when beginning development of a national GHS implementation strategy. This information should be obtainable in the National Profile, if one is available. Some useful baseline information may include:

- National production of chemical substances and/or mixtures (types);

- Information related to import or export chemical substances and/or mixtures (which products and with what trading partners);

- Current national levels of chemical production, import and export (as appropriate);

- National trends in chemicals use;

- Groups (*e.g.*, factory workers, farmers, transporters, consumers) exposed to chemical hazards;

- Level of participation in the development of the GHS and/or in the work of the UN Subcommittee of Experts on the GHS (UNSCEHGS); and

- Sources of available information on chemical risk management, chemical hazard communication and the GHS (*e.g.*, national and international approaches).

Situation Analysis - Government

This component of the situation analysis identifies and documents the existing national situation with regard to legislative infrastructures, institutional responsibilities and administrative capacities relevant to chemical hazard communication. Government institutions play an important role in collecting and documenting relevant information. All relevant levels of government should be considered, if appropriate, if they have responsibility for related legislation, including national (federal), provincial and local, as well as any applicable regional standards upon which national legislation may be based.

The following questions are meant to guide such efforts:

- What government agencies and departments are responsible for chemicals management, worker safety, environment or any other sector relevant to GHS implementation?

- What national policies are supported by GHS implementation, including obligations of international conventions, development priorities, etc.?

- What activities are conducted by government to implement, monitor and enforce existing legislation?

- Do customs authorities play a role in enforcement of the national system? If so, how and with what training?

- How is training on chemical classification and hazard communication undertaken, if at all?

- Are there poison information or control centres, toxicological or national CIS (occupational safety and health information) centres that can provide advice in the case of a poisoning accident or incident? Do they undertake any other related activities?

- Which government agencies are concerned with emergency preparedness and response and what are their relevant functions and activities?

- What resources are available to deliver the activities identified above?

Situation Analysis - Business and Industry

This section of the assessment documents the activities of the private sector that could potentially contribute to the development and implementation of an effective national GHS implementation strategy. The activities of the private sector can be an invaluable source of information and expertise for the development of the GHS implementation strategy.

The following types of questions may assist with the information to be collected:

- What is the structure and size of the chemical industry in the country (*e.g.,* major multinationals, national industries, mostly SMEs, etc.)?

- What knowledge and capacities exist concerning how to classify chemicals and mixtures? Where are these capacities located and "who" is responsible?

- What criteria are used by companies undertaking classification (if any)?

- What knowledge and capacities exist concerning how to prepare SDS and labels? Where are these capacities located and "who" is responsible?

- What label and SDS formats are in use?

- How are labels and SDS developed and by whom?

- What awareness raising and training activities or programmes are undertaken by companies who produce and market chemicals and those who use them?

- Which other initiatives, if any, have been taken through companies or industry associations related to chemical hazard communication (*e.g.,* voluntary use of labels; worker training on SDS; etc.)? Outline those initiatives.

- What resources are available to deliver the activities identified above?

Situation Analysis - Civil Society

This section will document the role and activities of civil society, including labour organizations, NGOs, consumer protection associations, etc., that contribute to effective chemical hazard communication at the national level.

The following types of questions may assist with the information to be collected:

- What labour unions, public interest groups, consumer protection associations or other NGOs (*e.g.,* representing women's and children's health) have (or may have) an interest in chemical hazard communication?

- What activities do these groups undertake related to chemical safety and hazard communication?

- What incidents of misuse have been reported which occurred as a result of faulty or missing hazard communication?

- How are activities funded and what levels of resources are available for civil society activities?

- What relevant activities are undertaken in the academic sector (*e.g.*, research and training) or by the media (*e.g.*, awareness raising)?

- Are any community or school organizations active on issues related to chemical safety and hazard communication? If so, how?

- What resources are available to deliver the activities identified above?

7.2 Identifying Gaps to GHS Implementation

The purpose of the gap analysis is to compare the existing situation, collected in the situation analysis, against what should be in place in order to implement the GHS. This also involves a comparison of existing requirements (if applicable) in all sectors to the provisions of the GHS. Again, information should be collected and analysed by government, industry and civil society for each of the four sectors (industrial workplaces, agriculture, transport and consumer product chemicals).

Gap Analysis - Government

An institutional and administrative gap analysis has the objective to reveal to what extent existing ministerial responsibilities and programmes are sufficient to provide for sound chemical hazard communication in the four sectors affected by the GHS.

The following questions are meant to facilitate such an analysis.

- Is division or responsibilities across government ministries ensured or are mandates overlapping within and across the four sectors?

- Is there sufficient government staff knowledge about legal and technical aspects of GHS implementation in all four sectors?

- Do government agencies have sufficient funding to ensure appropriate government action in all four sectors concerned (*e.g.*, facilitating regulatory reform)?

- Does government have sufficient capacity to facilitate enforcement of relevant national regulations on chemical hazard communication based on the GHS?

Gap Analysis - Business and Industry

In the long term, much of the work to implement the GHS will be undertaken by business and industry. The following questions are meant to serve as a starting point for a gap analysis in the business and industry sector concerning effective implementation of the GHS:

- Is there sufficient knowledge and capacity in industry concerning how to classify chemicals and mixtures in accordance with the GHS?

- Is sufficient capacity in place to prepare GHS-based labels and SDS?

- To what extent are chemical hazard communication tools used by business and industry already compatible with GHS provisions (*e.g.,* SDS and label formats)?

- Does business and industry implement sufficient complementary activities to facilitate effective hazard communication (*e.g.,* training of workers)?

- To what extent do affected business and industry entities effectively implement chemical hazard communication programmes? Are there any groups of business and industry entities where this is not the case and which require particular attention?

- What additional awareness raising and training activities will be required by business and industry to facilitated effective GHS implementation?

- Does sufficient capacity exist to make the required changes in order to effectively implement the GHS in business and industry? If not, how will capacity be developed?

- How can existing industry programmes, such as product stewardship, be used to facilitate GHS implementation?

Gap Analysis - Civil Society

Civil society organizations have important potential functions to assist the government and business and industry in effective GHS implementation, ranging from awareness raising activities to watchdog functions in order to ensure enforcement of relevant regulations. The following questions are meant to serve as a starting point for a gap analysis in the for civil society organizations concerning their role in effective implementation of the GHS.

- For each of the four sectors concerned, is there sufficient interest and capacity in labour groups and NGOs to contribute to GHS implementation?

- How can sustainable funding of NGO activities in support of GHS implementation be ensured?

- Is their sufficient interest and capacity in the academic sector to support GHS implementation via research and training?

- What additional programmes could be initiated implemented by civil society organizations (including the media) in order to promote effective GHS implementation?

- How can community or school organizations assist with awareness raising and education?

7.3 Preparing a Situation and Gap Analysis Report

The output from the situation and gap analysis should be a concise report, complemented by summary tables of the sector-specific findings. However, there are a number of ways a country may chose to present its findings. The situation and gap analysis can be presented as two separate sections or documents (a situation analysis report and a gap analysis report). One consolidated report can be divided by section based on the four sectors, or by actor group. Other options also exist and each country will decide what is best given its particular set of circumstances.

Countries should use the information gathered in the initial situation and gap analysis to provide a starting point for developing implementation plans. It may also be helpful for countries to discuss the results at a National GHS Workshop to initiate the transition from analysis to planning for implementation.

Case Study: Situation and Gap Analysis – Key outcomes in Nigeria

The Situation and Gap analysis in Nigeria revealed a number of weaknesses in the current system of chemicals management in the country. In particular, it was found that:

- There is a lack of national legislation for GHS implementation.
- The current institutional arrangements do not ensure clear responsibilities across relevant government ministries with resultant overlaps of functions within the different sectors.
- Very low-level knowledge of government personnel on the legal and technical aspects of GHS implementation for industrial production.
- Inadequate funding to ensure appropriate government action in facilitating necessary regulatory reforms and initiatives.
- Lack of necessary capacity for effective enforcement of relevant national regulations on chemical hazard communication based on the GHS for industrial workplaces.

Based on these results, Nigeria made the following recommendations that were then integrated into their National Implementation Strategy:

- Establishment of chemical pollution response and poison-control centers in all the six geopolitical zones.
- Delineation of functions and streamlining of mandates among the various ministries/agencies regulating chemicals.
- Establishment of a platform for cooperation and coordination of activities amongst the key ministries and agencies regulating chemicals at the highest level of Authority.
- Fostering of synergies and partnerships among the relevant regulatory and civil societies.
- Simplifying and translating the GHS and SDS into different local languages at the national level.
- Display of hazard communication elements as appropriate – *e.g.,* in industrial production, transportation, etc.

7.4 Comprehensibility Testing

To inform the situation and gap analysis, countries may consider undertaking comprehensibility testing of GHS hazard communication elements in all four sectors. Comprehensibility testing (CT) is a survey-based method for obtaining information on the understanding of GHS hazard communication elements among the public. Comprehensibility testing is therefore a key tool for assessing the understanding of chemical hazard communication pictograms and/or key statements and provides important feedback for developing a chemical hazard communication system and targeted training. Further information on the importance of comprehensibility is found in section 2.6.

The results of comprehensibility testing can be used to inform the situation and gap analysis in the four key sectors of GHS implementation: industrial workplaces, agriculture, transport and consumer products. This can help countries to subsequently identify areas where capacity building interventions are needed in order to improve understanding of GHS-based hazard communication elements, thereby improving protection of human health and the environment. The actual process of CT also serves as a means to raise awareness on chemical hazards and the GHS.

The UNITAR/ILO CT methodology is based on a questionnaire administered in person to various target audiences. It starts with a training workshop at which the GHS and CT are explained and where surveyors have an opportunity to learn about and practice administering the CT questionnaire. Often countries choose to designate an academic institute or other research organisation to conduct CT. Once the surveyors are trained, they are disbursed to various field-testing sites to test comprehensibility of the GHS. It is important to choose samples of the population that reflect the sectors and actor groups related to the GHS. Once the information has been collected, the information should be analysed to identify the areas of greatest capacity building need, and the results should be reported as appropriate. The testing package can be found on the UNITAR website at: www.unitar.org/cwm/ghs_partnership/ct.htm.

Case Study: Comprehensibility Testing in Thailand

Comprehensibility testing was conducted in 2006 in several parts of Thailand including Bangkok and its suburban areas where most industrial areas are located. The five sectors in this study included 1) Consumer product sector 2) Industrial sector 3) Agriculture sector 4) Transport sector and 5) Public health service and emergency response sector. These five sectors were categorized as those in which daily life and working life involve using chemicals. The overall number of the respondents who participated in this study was 721. Based on the data collected from the CT, it was found that:

- The occupation of the respondents is related to the level of knowledge and awareness to chemical hazards. From the study, the industrial and transport sector have the highest level of chemical knowledge, are more aware of the GHS and can mostly interpret GHS pictograms and hazard statements. On the other hand, the consumer and agriculture sector have a medium level of knowledge and awareness.
- With regard to pictogram recall, most respondents can recall the skull and crossbones and flame pictogram because these pictograms are easy to understand, highly visible and mostly seen in many places in other social contexts such as in petrol stations or on chemical labels.
- Pictograms least recalled are gas under pressure and the exclamation mark pictogram because these pictograms are difficult to understand as reported by most respondents.
- The understanding of hazard statements requires both comprehensibility in reading the statement and comprehensibility in understanding scientific terms such as mutagenicity, carcinogenicity, and reproductive toxicity. Lack of understanding in these terminologies might alter comprehensibility.

Based on these findings, Thailand developed targeted awareness raising and training activities to improve the understanding among stakeholders of GHS hazard communication elements.

7.5 Legal Analysis and Development of a Legal GHS Implementation Framework

While the GHS itself is not legally binding, countries that implement the GHS will want to develop legally binding implementation measures to ensure full implementation of the GHS.

Countries may first wish to conduct a legal analysis, much like the situation and gap analysis, this would focus on understanding the current legislation or regulations for hazard classification and communication, and the changes needed to implement the GHS. Based on the results of the analysis, governments can examine the potential options for the development of a legal implementation framework. Competent authorities adopting the GHS may thus choose different implementing instruments according to their circumstances, needs and already existing legal framework.

Legal Analysis

A legal analysis provides an overview of the existing regulatory framework, and a context for policy decisions on implementation. The analysis is conducted in two parts, first looking at the current situation, then comparing it with what should be in place to implement the GHS.

The legal analysis can reveal areas for legal or regulatory reform in order to ensure that the national legislative and regulatory framework for chemical hazard communication is compatible and consistent with the GHS. This involves a comparison of existing requirements (if applicable) in all sectors to the provisions of the GHS, identification of GHS requirements not provided in national regulatory system, identification of conflicts between GHS and national requirements, and determination of potential implications of GHS implementation.

Case Study: Legal Analysis for the GHS in Canada

A GHS legal analysis in Canada revealed key pieces of existing legislation and regulations that may be affected by the GHS:

- Hazardous Products Act (PART I), Consumer Chemicals and Containers Regulations, 2001
- Hazardous Products Act (PART II), Controlled Products Regulations (for work place chemicals)
- Pest Control Products Act, Pest Control Products Regulations
- Transportation of Dangerous Goods Act, 1992, Transportation of Dangerous Goods Regulations

Legal review is continuing in order to determine the most optimal means for implementing the GHS, whether by revising current legislation, creating new legislation, consolidating, or a combination of options. Further information on Canada's GHS implementation efforts can be found at: www.hc-sc.gc.ca/ahc-asc/intactiv/ghs-sgh/com/index-eng.php.

The legal analysis can result in a number of scenarios, for example: countries may, for a given sector, find out that a legislative and regulatory framework addressing the above issues is already in place. In this case, the identified gaps would highlight the need to make existing legislation compatible with the GHS (*e.g.*, ensuring the various classification criteria, pictograms, and SDS format are aligned with GHS provisions). The analysis should thus address classification criteria, as well as labelling and SDS requirements for all four sectors affected by the GHS, taking into consideration which elements are appropriate for each. Alternatively, the legal analysis may reveal that for a given sector a regulatory framework for chemical hazard communication is absent, thus pointing to the need for development of new legislation, regulations or standards.

The following are some relevant questions to guide the analysis:

Understanding the current legal environment for chemicals management

- What laws, regulations or standards (if any) exist which address requirements relevant to chemical hazard classification and communication (*e.g.*, data collection, classification criteria, labelling and SDS preparation)?

- Which sectors are covered by the existing legal framework? If transport sector is covered by the existing system, is it consistent with the internationally harmonized UN transport model regulations?

- Does the existing legal framework assign clear ministerial responsibilities to cover all four sectors affected by the GHS?

- What health, safety, environment or other legislation exists which are related to the GHS?

- What hazard classification and communication elements are covered by the existing system?

- Are there import and export control laws (*e.g.,* application of the Rotterdam Convention) relevant to controlling the entry of and information about chemicals?

- Is there any legislation or standard related to training for chemical hazard communication?

- Are there any requirements to report information on the effects and/or exposure (human and environmental) to chemicals?

- Do existing legal instruments related to chemicals management include compliance and enforcement provisions?

- What parts of the chemicals lifecycle is covered by existing legal instruments? (This could be different for different sectors.)

- What are current legislation or regulations regarding access to information and protection of confidential business information (CBI)?

Considerations for developing the legal framework

- If regulatory requirements exist, to what extent are relevant provisions compatible with the requirements of the GHS?

- Which regulatory adjustments need to be made to ensure compatibility?

- Are there any duplicative existing regulations that should be addressed?

- Do existing legal instruments provide a clear mandate and framework to ensure support for relevant government agencies to implement chemical hazard communication programs and the GHS?

- If a legal framework for sound chemical hazard classification and/or communication in a given sector is not in place, what specific reform measures need to be undertaken to ensure that national regulatory framework provides for comprehensive and effective implementation of the GHS?

- Which GHS sectors are not covered by the existing legislative framework?

- What are the deviations for hazard classification and communication between the existing system and the GHS requirements?

- What timeframe (including provision for transition periods) should be used in implementing new or amended regulations?

Legal Implementation of the GHS

Based on the outcomes of the legal analysis, countries may wish to focus their efforts into a GHS legal implementation framework. This could be a plan that would include actions required for legal GHS implementation.

There are a number of options for legal implementation of the GHS, including:

- New law encompassing all GHS sectors
- New laws, regulations and standards by sector
- Amending existing laws (*e.g.*, incorporating GHS elements by reference), regulations and standards, etc.
- Single consolidated Act
- Amend existing legislation to incorporate GHS elements
- Amend existing legislation to incorporate GHS elements by reference
- Amend standards with corresponding amendments to legislation (*e.g.*, for compliance and enforcement)
- Consolidate and amend existing standards with corresponding amendments to legislation (*e.g.*, for compliance and enforcement)

The legal analysis and development of the legal implementation framework can be conducted in a number of ways depending on a country's individual GHS capacity building process. In some cases the legal analysis will be included within each sectoral working group, where legal issues are reviewed in the situation and gap analysis and recommendations are developed for regulatory changes or new legislation as part of the sectoral implementation plans. In other cases, countries may consider establishing a multi-sector working group on legislation to ensure coordination and a coherent approach to regulatory changes.

Case Study: Legal Implementation of the GHS in the EU

The new Regulation on classification, labelling and packaging of substances and mixtures, aligns previous EU legislation on classification, labelling and packaging of chemicals to the GHS (Globally Harmonised System of Classification and Labelling of Chemicals). Its main objectives are to facilitate international trade in chemicals and to maintain the existing level of protection of human health and environment. The CLP Regulation was published in the Official Journal 31 December 2008 and entered into force on 20 January 2009. According to the Regulation, the deadline for substance classification according to the new rules will be 1 December 2010. For mixtures, the deadline will be 1 June 2015. The CLP Regulation will ultimately replace the current rules on classification, labelling and packaging of substances (Directive 67/548/EEC) and preparations (Directive 1999/45/EC) after this transitional period. For more information, visit the related EU website at:
http://ec.europa.eu/enterprise/sectors/chemicals/classification/index_en.htm.

8. Engaging Stakeholders in GHS Capacity Building

Supporting Activity 1: Stakeholder Workshops

Stakeholder workshops specifically addressing the needs of particular actor groups, such as labour or business can be an effective way to reach large audiences to share information about the GHS. These workshops are often organised during the assessment or development phase of the national GHS implementation strategy in order to inform stakeholders about the GHS and planned GHS capacity building projects. These workshops can also be used as a forum for stakeholders to provide specific input into the National GHS Implementation Strategy and can be used to help identify more specific training needs from the various actor groups involved.

It is suggested that countries actively engage all relevant sectors and actors in all parts of the GHS planning and implementation process. However, in order for these various groups to take an active role in GHS implementation, it is often necessary to raise awareness and train stakeholders on the technical and policy details of the system. As a priority, countries may wish to conduct awareness raising and training activities that would increase the understanding of the GHS among relevant groups in government, business and industry and civil society, as well as the public. Many of these activities could already be initiated during the beginning stages of planning and assessment within GHS implementation, while others can be integrated as part of a National GHS Implementation Strategy.

Through these activities the specific needs and required actions of industry or civil society groups can be further addressed and they can effectively contribute to the successful implementation of the GHS. UNITAR has developed an information note on the role of civil society in GHS capacity building. This document is available by request from UNITAR.

8.1 Awareness raising

Case Study: Using video and theater to raise awareness in the Gambia

In the Gambia, GHS awareness raising videos were developed by theater groups to inform the public about the GHS. The theater group acted out a market place scenario - in two different local languages - where vendors and customers discussed the meanings of various GHS symbols. This video, and other GHS awareness raising activities, were demonstrated during the National Chemical Awareness Week, a country-wide event to increase public understanding of chemical use. The videos were also played on local television stations. A copy of these videos is available from UNITAR upon request.

Countries may wish to consider how to reach the widest audiences to inform constituents about the GHS and its benefits to the country. These could complement sectoral awareness raising activities. In previous pilot projects, countries have organised very successful awareness raising campaigns through the development of TV commercials on the GHS produced by a local theatre group, and the development of a Youth GHS Awareness Week, highlighting important aspects of the GHS to schoolchildren through classroom programmes. Box 4 provides samples of materials developed by various countries.

Box 4: Samples of GHS Awareness Raising Materials

Excerpt from a Consumers Brochure in Senegal

Philippines Poster for the Workplace

Cover of the Thai Awareness Raising CD

8.2 Technical training

Technical training is an integral part of improving capacities to implement the GHS. Countries may choose to work with industry or civil society partners, such as labour unions or pesticides education groups to conduct the training and to ensure that information reaches a wider audience. While training activities to assist GHS implementation will vary across sector and target audience, countries may wish to consider developing an integrated approach to technical GHS training that addresses core needs in all four sectors. Countries can also take advantage of internationally agreed and available training materials available through international organisations. UNITAR/ILO have developed an “Introduction to the

GHS" basic training course that provides overview information on the GHS. It is also in the process of creating an advanced GHS training course that would provide technical details on GHS classifications and hazard communication.[11]

Supporting Activity 2: National GHS Workshop

During an initial phase of developing a national GHS implementation strategy, countries may consider organizing a National GHS Workshop, with participation of relevant government ministries, business and industry representatives, and civil society. The workshop could provide an opportunity to:

- Learn about technical aspects of the GHS, as well as infrastructure which needs to be in place to ensure effective GHS implementation;
- Review the situation/gap analysis, as well as results from comprehensibility testing;
- Review the roles, responsibilities and necessary activities of business and industry, and public interest and labour organizations in GHS implementation;
- Initiate development of required legislative reform for GHS implementation;
- Initiate development of sectoral implementation plans, outlining specific activities, responsibilities, timeframes and targets; and
- Discuss next steps to develop a National GHS Implementation Strategy

There are several options as to when a country may want to hold the National GHS Workshop and this depends in part on the goals of the workshop and the stage of implementation of the country. For example, some countries may chose to hold their workshop in the initial stages of capacity building. This would provide a forum to raise awareness and learn about the GHS and to discuss initial steps and division of responsibilities for conducting the situation and gap analysis, comprehensibility testing, legal analysis and other relevant activities. In other cases, countries may find it more effective to hold the National GHS workshop after these activities have been completed in order to discuss in-depth the development of the National GHS Implementation Strategy and its elements, including the sectoral implementation plans, legal framework, etc.

The workshop can serve to ensure that agreed goals and priorities lead directly to subsequent activities in a coordinated fashion (*e.g.,* development of implementing legislation and sectoral implementation plans). In general, workshops can be held over a period of 2-4 days depending on the needs of the country.

Based on the objectives of the workshop, expected outcomes could include:

- A workplan and preliminary outline for the development of the sectoral implementation plans, including an indication of ministries and organizations involved, activities to be undertaken, means of implementation, and timelines and milestones;
- Concrete recommendations on how the GHS should be integrated into national legislative infrastructures (including provision for transition periods and coordination with trading partners); and
- Agreement on the next steps regarding development of the national strategy document and national resolution.

[11] For further information, please contact UNITAR.

9. Developing a National GHS Implementation Strategy

A National GHS Implementation Strategy document is a means to consolidate the results of GHS activities thus far, and should provide detailed information on the next steps for GHS implementation. The report may be seen as a "road map" for GHS implementation by a set target date. As outlined in Figure 3, the National GHS Implementation Strategy can be seen as the core document in building capacity for GHS implementation, and serves as the framework for continued GHS implementation. In particular, the report should include the situation and gap analysis, consideration of cross-sectoral issues, as well as outline the objectives, activities and tasks, responsible parties, budgets and suggested implementation mechanisms for remaining actions. It should be prepared taking into account all necessary elements for implementation. Some important general information that should be included are, inter alia:

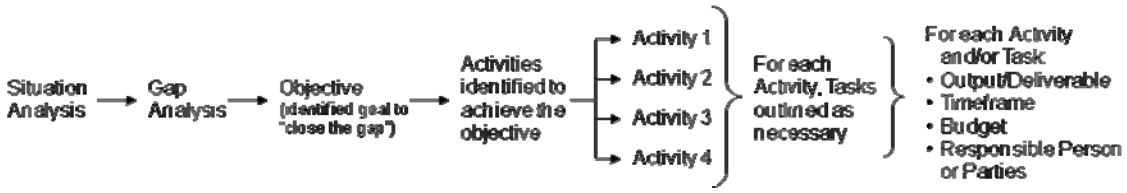
- The target date for full GHS implementation, given international and national factors (including provision for transition periods, as appropriate)
- An organogram of the National GHS Implementation Committee and relevant subcommittees
- Priority implementation issues
- Means for implementation (*e.g.*, phase in periods, starting with pilot projects, etc.)
- Activities needed to ensure GHS implementation by the target date
- Necessity of and means for acquiring resources necessary to carry out activities
- Possible synergies with other international agreements (*e.g.,* Rotterdam and Stockholm Conventions, ILO Convention 170, etc.)
- Description of cross-sectoral issues
- Role of stakeholders in raising awareness and training.

The following sub-sections outline how to develop a framework of specific actions for the GHS NIS.

9.1 Implementation Strategy Framework: Objectives, Tasks, Responsibilities, Timeframes and Budgeting

Based on the outcomes of the situation, and in particular, the gap analysis, the necessary steps for implementing the GHS should then be identified. In order to convey this information, the next step is to outline in detail for each gap identified, exactly what actions are necessary to fulfil a particular aspect of GHS implementation. In most cases, the basis for these actions can be described in the form of an objective. Based on the objectives and activities, tasks should be outlined in a step-by-step form that would detail exactly how a particular objective would be met. Next to each activity/task should be a timeline for completing the task, a proposed budget allocated for its completion and a person or party identified as responsible for that particular component. Figure 4 provides a flowchart of how this information can be developed.

Figure 4: Suggested Framework for NIS Actions



Objectives, Activities and Tasks

Objectives can be considered a description of the goal identified to "close the gap" between the current situation (situation analysis) and what is needed in order to implement the GHS (gap analysis). Based on the objective, a set of concrete activities can be outlined which describe the necessary steps to achieve this objective. In most cases, activities themselves can still be quite broad and may require further detail in the form of specific tasks and outputs needed to complete a particular activity. For an example of how this could be visually developed, please see the case study from Cambodia. It may be the case that a particular task could support multiple objectives, and this should be duly noted within the NIS.

Output/Deliverable, Timeframe, Budget and Responsibilities

For each activity or task a concrete output or deliverable should be identified which indicates the activity has been completed. Providing an estimate of the resources necessary for completing a particular activity or task is key to overall planning and is essential for coordinating the various actions detailed in the NIS. First, each activity and/or task should have an estimated timeframe for completion in order to set concrete, time-limited goals for when particular tasks should be completed. While the estimated timeframes should reflect as accurately as possible a realistic amount of time needed to complete project activities, there should also be mechanisms built in to adjust the schedule as necessary and to avoid any bottlenecks of activities that are unable to continue because one is not complete. Further, an estimated budget should be identified in order to have an idea of how much money should be allocated to each task. This budget should be broken down to include estimated amounts dedicated to facilities, equipment, travel, human resources, etc. Budgeting is also important to demonstrate to donors and other parties involved what resources are currently available and what resources are still needed in order to complete a particular project activity. Therefore, it can serve as an important means of communicating expected project resource constraints for fundraising and resource mobilization. Finally, the responsible person and/or parties should be agreed in order to designate who will ensure that each identified activity will be completed. For an example of how this could be visually developed, please see the example from Cambodia.

Case Study: Actions for GHS Implementation in Cambodia

1) **Strategy 1: Develop legislation and other regulations for implementing GHS.**

- **Objective:** Develop Sub-Decree on the GHS.
- **Executive Agencies:** MoE, MAFF, MIME, MoPWT, MoC
- **Cooperation Agencies:** MEF, MoJ, MoLVT, Private Sector, and Civil Organizations
- **Actions:**

Code	Activities Description	Timing											Resources
		2009				2010				2011			
		1	2	3	4	1	2	3	4	1	2	3	4	Budget (US$)
1.	Form inter-ministerial legal and technical team and select national legal expert. to advice on draft regulations of relevant institutions and in order to advice on procedure relation GHS in Cambodia.				√									-
2.	Review and assess existing legal instruments related to the GHS.				√									4,000
3.	Identify need regarding the future implementation of sub-decree on the GHS of classification and labelling of chemicals.				√									5,000
4.	Develop first draft of sub-decree on the GHS.				√									5,000
5.	Organize consultation workshop on the first draft of sub-decree on the GHS of classification and labelling of chemicals.				√									5,000
6.	Review and revise the first draft and produce the second draft of sub-decree on the GHS.				√									4,000
7.	Organize consultation workshop on the second draft of sub-decree on the GHS of classification and labelling of chemicals.				√	√								5,000
8.	Review and revise the second draft and develop final draft of sub-decree on the GHS and submit to the office of the council of minister for adoption and approval.				√	√								4,000
9.	Disseminate the sub-decree on the GHS to all stakeholders and to the public.					√	√							4,000
10.	Develop ministerial regulations and procedure for implementation of the sub-decree on the GHS in each sector (Industrial workplace, agriculture, transport, and consumer product).					√	√							10,000

Using the example from Cambodia's NIS above, based on the results of their earlier assessments, one identified objective was the development of a sub-decree on GHS. In order to accomplish this goal, they have identified several activities. In each case, there were multiple steps in order to complete each of the activities. For example, for activity 4: Develop First Draft of Sub-Decree on GHS, it would be necessary to further detail the tasks necessary for this activity. While this information is not provided in the box above, we could imagine that this could include, 1) identify legal consultant to draft decree, 2) convene legal review sub-committee to agree on terms of draft legislation, etc. Based on the agreed activities, Cambodia then identified a timeframe for each activity, as well as an estimate of resources needed for each activity. In order to further support effective planning, Cambodia could also break down each estimated budget line by the necessary costs for a particular activity, including costs of human resources, equipment, office rental, supplies, etc. In the top section of the action, Cambodia has also identified the coordinating agencies and the partner agencies and organisations. Further detail on exactly which agencies and organisation are responsible under each activity would further facilitate project planning.

9.2 Preparing Sector-specific GHS Implementation Plans

As a means to structure the objectives, timelines and responsibilities of GHS implementation among the key sectors, countries may chose to prepare sector-specific implementation plans. Dividing implementation into sector-specific sub-sections provides more flexibility to take into consideration different baseline situations and the results of the situation and gap analyses within each sector. These sectoral plans would subsequently be reviewed and integrated into the national GHS implementation strategy report.[12] Each sector-specific

[12] A guidance package on sound planning/Action Plan Development is available from UNITAR. This includes: Guidance on Action Plan Development for Sound Chemicals Management, Guidance Document and Action Plan Skills-Building Workshop and Training Modules.

implementation plan should reflect input from government, business and industry, and civil society.

9.3 Endorsement of the National GHS Implementation Strategy

As a complement to the implementation report, countries may also wish to elaborate a resolution among all stakeholders (government, business and industry, and civil society) and sectors to confirm commitment of specific goals for GHS implementation and the remaining activities, and to move forward with agreed actions as outlined in the NIS. This resolution could be endorsed, for example, at a GHS Review Workshop (see Supporting Activity 3).

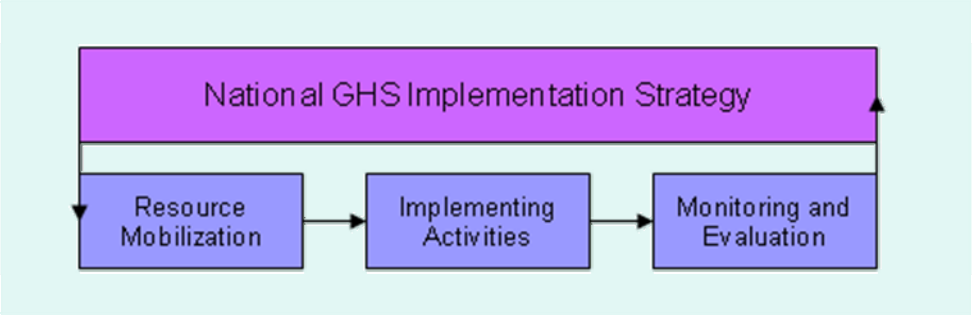
Supporting Activity 3: GHS Review Workshop

As countries near completion of developing their National GHS Implementation Strategies, they may find it useful and timely to convene a National GHS Review Workshop at which the NIS report can be made available for final discussion and endorsement by high-level government decision-makers and concerned stakeholders.

10. Putting the National GHS Implementation Strategy Into Action

Once the NIS has been agreed and finalised, the next phase is to begin actual execution of the strategy. In many cases, some of the activities identified within the NIS, such as awareness raising and training for stakeholders may already be in process. However, a systematic approach, following the terms agreed in the NIS, provide a framework for step-by-step action for the most effective implementation of the plan. Figure 5 lays out the cycle of ongoing GHS implementation.

Figure 5: National GHS Implementation as an Ongoing Process



10.1 Resource Mobilisation

Mobilising the necessary resources for putting the NIS into action can be vital to the potential success of the project. While resource mobilisation should be considered from the very early stages of capacity building and should be an ongoing process, it is often once the NIS is completed that countries can provide concrete evidence of actions planned for GHS implementation. This completed plan can then be presented to national authorities and decision-makers, and "shopped" around to donors and aid agencies for support of NIS implementation. Countries should consider sources of support ***within*** the country, such as from the Ministries of Finance or Planning, or as part of the budgets of related sectors, such as agriculture, labour, environment, etc. External sources of support from international organisations, aid agencies, partner countries and regional organisations can also be considered. Further information and guidance on resource mobilisation can be found in UNITAR's "Guidance for Developing SAICM Implementation Plans".

Case Study: Resource Mobilisation and the SAICM QSPTF

One potential source of funding for GHS capacity building activities is the SACIM Quick Start Programme Trust Fund (QSPTF). The QSPTF is a voluntary, time-limited trust fund to support initial enabling capacity building and implementation activities in developing countries. GHS is considered to support the objectives of SAICM. Applications are accepted twice a year and are reviewed by a committee.

Zambia, the Gambia, Barbados and the Congo have all successfully applied to the Trust Fund and are now receiving support for GHS capacity building activities, including the development of a situation and gap analysis, a national GHS workshop and the development of a national GHS implementation strategy. Further information on the exact requirements and eligibility can be found on the SAICM website at: www.saicm.org/index.php?menuid=22&pageid=252.

10.2 Implementing Activities

As an essential element of the NIS, countries will have identified and agreed on activities to carry out in the implementation phase. The following sub-sections describe activities that are key to implementation. The exact details of how these will be carried out will depend on each particular country's circumstances. Countries will also want to add other activities (such as further training – see section 8.2) as appropriate.

Communication and Outreach

While the NIS is normally agreed among key stakeholders, and is developed taking into account the results of initial assessments and careful discussions and planning, once the NIS is initiated, countries may chose to initiate or continue wide-spread awareness raising and outreach about national GHS implementation. This would include further informing the diverse groups of stakeholders of upcoming project activities that they could be involved in, or that could affect them. For example, governments may want to send out fliers or letters to businesses and industry to inform them of potential upcoming changes to regulations or chemicals management standards. Labour unions and public interest groups may be involved in setting up workplace posters or distributing brochures to audiences informing them of GHS symbols and other hazard communication elements.

International Dialogue

At every stage of the GHS capacity building and (especially) implementation process, countries may wish to communicate with key multilateral groups such as the UNSCEGHS in order to inform the international community of progress on GHS within a particular country, to share experiences, get feedback and request further resources to support implementation. This could include participation in the UNSCEGHS as an observer or applying to become a member. Once a member, countries may chose to submit informal documents to the UNSCEGHS or provide informational interventions to make others aware of the status of GHS implementation.

Ongoing Stakeholder Involvement

Although it is expected that business and industry, and civil society representatives will participate in the key GHS planning and implementation activities, stakeholder groups may find it helpful to undertake specific activities to address the needs of particular user groups. These activities could be a continuation of the stakeholder workshops held in the initial phases of capacity building specifically addressing the needs of particular actor groups or stakeholder groups within sectors. Ongoing stakeholder input should also be considered for any governmental decision-making on legal or regulatory structures for GHS implementation.

Legal Implementation of the GHS

Based on the outcomes of the legal analysis and the agreed legal framework within the assessment phase of GHS capacity building, countries will want to carry out the necessary legislative actions for implementing the GHS. The way this is done will depend significantly on the legal structure in each country for developing, reviewing and agreeing on new rules.

Enforcement

The main way to ensure that the GHS is being used correctly is through enforcement. While the UN SCEGHS is responsible for implementation and maintenance of the GHS at the international level, as a voluntary standard available for adoption by countries, the GHS is expected to be implemented via national regulations, legislation or administrative procedures at the national level. Thus, once a country legally adopts the GHS, an effective system for monitoring and enforcing the national system will be the responsibility of relevant government authorities, including worker, health and safety, and consumer inspectorates, customs agencies, etc. This will help ensure that the new legal infrastructure dealing with the GHS is correctly and efficiently implemented and followed.

Emergency response

Emergency responders are those involved in responding to chemical emergencies such as spills, leaks or explosions. Whether in a factory setting, storage facility or in a road accident, they need several types of hazard communication tools. In the case of an industrial accident, for example, workers and emergency responders need to know what mitigation and control measures are appropriate. In such a situation, they may require information that can be seen from afar. They may also then require expert assistance with regards to how to treat a particular chemical emergency, such as a spill in a given environment (*e.g.*, knowledge of factory design can be used to help contain a chemical spill in a particular facility).

Fire fighters and those first at the scene of a transport accident also need information that can be distinguished and interpreted at a distance. Such personnel are highly trained in the use of graphical and coded information. Labels are required to provide immediate summary information regarding the chemical at hand, as well as detailed information found in an SDS regarding how a chemical should be handled. For agricultural or consumer poisoning incidents, the information needs of medical personnel responsible for treating victims may differ from those of fire fighters. In this case, the role of poison control centres and others with toxicological expertise is important. Countries may wish to consider how to involve these experts in the development of the national GHS implementation strategy.

Case Study: Emergency Response Cooperation in the Americas

In June of 2009, several emergency response centers in the US and South America signed a Memorandum of Agreement (MOA) of cooperation to enhance the ability of emergency responders to effectively and efficiently deal with incidents involving dangerous goods. Their agreement was based on the recognition that, with the growth in the global dangerous goods market, there is increased interest in enhancing the information available to emergency responders globally, particularly where such capabilities may not be well established. The MOA facilitates the sharing of dangerous goods information and cooperation in the event of a chemical spill, leak, fire or exposure where necessary information is quickly needed to protect personnel, property, and the environment. Based on the MOA, it was agreed that signatory centers would share emergency response information, as well as SDSs, and other hazard communication tools relevant for chemical safety.

10.3 Monitoring and Evaluation

The importance of monitoring and evaluation of GHS implementation should not be overlooked. According to the SAICM Quick Start Programme Trust Fund (QSPTF) guidelines, "Monitoring is considered to be the continuous process of assessing the status of project implementation in relation to the project work plan. It is considered as a means to suggest performance improvements and the achievement of results. Evaluation is a way of determining as systematically and objectively as possible the relevance, efficiency, effectiveness and impact of the project's activities in relation to its objective." It continues by asserting that, the purpose of monitoring and evaluation is to "assess [ ] project implementation, to identify project achievements and challenges, to measure project performance against objectives and to provide indications of progress. The monitoring and evaluation should be undertaken using evidence-based information that is credible, reliable and useful, thereby permitting the incorporation of conclusions, recommendations and lessons." Whether required by an external donor or for internal auditing and review, consistent monitoring and evaluation of the NIS is key for assessing progress with GHS implementation and for continued feedback and coordination of GHS implementation among the various stakeholders. This review can also be used to ensure that GHS implementation is progressing in the right direction and that the actions undertaken and planned are meeting the specific objectives set by the NIS. Monitoring and evaluation should take place regularly throughout the implementation process and can be done by a neutral party. It can be considered an ongoing feedback loop to improve and refocus the NIS based on the results of ongoing and completed activities.

11. Coordination with Regional and Trading Partners

As the trade in chemicals between regions and countries increases, a regional approach to GHS can be an important mechanism for facilitating GHS capacity building and implementation and for coordinating time-plans and phase-in periods. Regionally coordinated implementation can facilitate trade and commerce, help reduce illegal trafficking of chemicals, and increase access to information. Given limited resources in many countries, a regional approach to GHS implementation could also provide an efficient and effective way to support and enhance country efforts, as it could provide a means to further share information and resources on the GHS. Furthermore, many of the national activities and recommendations could also be applied at the regional level. Countries may decide to form regional or trade related committees to coordinate and discuss their respective GHS implementation approaches. Further activities are described below.

11.1 Regional Coordination

Coordinating with regional and trading partners is an integral part of GHS capacity building and implementation. To coordinate GHS implementation activities in a region, a Regional GHS Coordinating Committee could be established based in one of the regional organisations or GHS implementation activities can be added to the agendas of existing regional committees. Further regional technical sub-committees could be established, by sector, if appropriate to coordinate sector-specific GHS activities and to address the particular needs of each sector. Subcommittees could include a Harmonised Chemicals and Pesticides Registration System or an emergency preparedness and response committee, inspectorate, and a rapid alert system for chemicals emergencies that could function at a regional level.

11.2 Regional Policy Initiatives

In any given region, there may already exist a number of regional efforts that are related to the GHS. Wherever possible, the GHS should be integrated into existing workplans and programmes in a region. For example, in Africa, the GHS is an integral part of the Action Plan for the Environment Initiative of the New Partnership for Africa's Development (NEPAD), and is related to a number of policies already developed by the Economic Cooperation of West African States (ECOWAS), including their Environment, Agriculture and Water Policies. The GHS could be included into these existing policy or regional agreements, or regions may chose to formulate and enact common GHS-implementing legislation to be approved by a regional body. Regions may wish to develop a regional implementation strategy and workplan for GHS.

Case Study: Regional GHS Implementation in SADC

Using the recently developed South African standard for GHS as a basis, the Southern African Development Community (SADC) Standardisation body (SADCSTAN) is working to develop a standard for regional application of the GHS for the 14 countries of SADC.

11.3 Existing regional organisations and initiatives

The GHS can also be promoted through existing regional organisations and integrated into existing regional initiatives. This could include the use and involvement of regional economic organisations such as the North American Free Trade Agreement (NAFTA), Association of South East Asian Nations (ASEAN), Mercosur, etc.; and civil society groups such as Consumers International, International POPs Elimination Network (IPEN), Pesticide Action Network (PAN), and International Trade Union Confederation (ITUC); and business and industry associations such as Croplife and International Council of Chemical Associations (ICCA). Regional organisations can support GHS implementation through coordination, training and sensitisation of GHS among the member countries. Many regions have existing cooperative agreements or initiatives related to trade, health, labour and environment and the GHS can be used as a tool for supporting these efforts. This is also an important consideration for funding from regional organisations and international donors.

11.4 Information sharing and exchange

A key means of regional GHS capacity building and implementation is the development of information sharing and exchange networks. In particular, regions may consider:

- In countries where poison control centres exist, sharing information with countries without centres through exchange and cooperation programmes;
- The development of information exchange networks, in the form of websites and databases, to enhance information dissemination on chemicals safety and management;
- Promotion of institutional cooperation within the region, such as with research institutes, universities and national laboratories;
- Coordinating experts, for example, by developing exchange programmes, establishing a roster of experts and taking advantage of train the trainers;
- Regional or bilateral training for border and customs officials to coordinate and ensure safe cross-border transport.

Case Study: Regional GHS Workshop for the Countries of the Economic Commission for West African States (ECOWAS)

The Regional Workshop on Chemical Hazard Communication and GHS Implementation for ECOWAS Countries took place 13-15 May 2008 in Abuja, Nigeria. The workshop brought together over 100 representatives from the 15 ECOWAS countries, as well as representatives of international and regional organizations, business and industry, public interest groups and labour unions. The outcome of the workshop was a communiqué along with concrete recommendations and proposed activities for implementing the GHS at the national and regional levels within ECOWAS countries.

11.5 Regional GHS Workshops

To initiate and improve coordination and dialogue on the GHS, regions may wish to organize a Regional GHS Workshop. This event could provide detailed information on the GHS, as well as background on the current state of classification and labelling in specific countries and in a region. Countries already undertaking steps towards GHS implementation could share there experiences and lessons learned to countries just starting the process. Special focus should be given to existing

differences and future challenges of hazard communication and GHS implementation for government, business and industry, and public interest and labour organizations in the four sectors of industrial workplaces, agriculture, transport and consumer products. The workshop could include working groups focused on identifying appropriate ways and means, at the national and regional levels for GHS implementation.

Case Study: Regional GHS Capacity Building in Southeast Asia

From 2005-2007, the project "Strengthening National and Regional Capacities to Implement the GHS in ASEAN", supported GHS implementation at the regional and national levels within the Southeast Asia region. Regional GHS capacity building activities involving all ten ASEAN countries and relevant regional organizations resulted in a regional commitment to GHS implementation. In particular, the project included:

- A broad range of awareness-raising and training materials developed, in national/local languages, including 39,000 brochures, posters, and other materials produced and distributed thus far in pilot countries
- Regional GHS capacity assessment report prepared
- Regional GHS implementation strategy for ASEAN developed and adopted at a major regional conference
- Regional capacity assessment for public interest and labour organizations developed
- Regional expert workshop for public interest and labour organizations completed and a network of public interest and labour organizations (SEApChemNet) for GHS implementation and chemical safety established
- A total of 1,584 government, industry, and non-governmental beneficiaries trained to prepare for GHS implementation in ASEAN.

The results achieved through this project provide a sound basis for possible future activities and cooperation throughout the region. The final agreed ASEAN Regional GHS Implementation Strategy can be found at: www2.unitar.org/cwm/ghs/ghs12-3.html.

Building on the outcomes of the initial project, follow-up activities are being supported in ASEAN during 2010-2012; for more information, see: http://www.unitar.org/cwm/ghs/ASEANproject.

CONCLUSION

A key aspect of sound chemicals management is the identification of the hazards they pose and the communication of relevant precautionary information and handling measures for their safe use. In order to facilitate a consistent and comprehensive approach to chemical hazard identification and communication, the GHS was created. The overall goal of the GHS is to ensure that information on chemical hazards is made available to workers and consumers in a harmonized and comprehensible format (on labels and in SDS).

Around the world, countries and regions are working to implement the GHS. However, implementation through the development of legal instruments, the consistent use of GHS by industry and general comprehension of the system by the public takes extensive coordination among the various sectors and actors affected by chemicals management as well as continued cooperation between countries, regions and the international community.

Implementation of the GHS is an ongoing process and the Purple Book continues to be revised and updated to incorporate the most recent international discussions and feedback. To support countries and as part of the *Global GHS Capacity Building Programme*, UNITAR/ILO created this guidance document to provide a detailed description of possible steps for developing a national GHS implementation strategy. While it can be useful to read the document from beginning to end, this guidance can also be considered a "toolbox" where users can draw from and focus on specific sections pertinent to their particular circumstances.

The eventual outcome of global collective efforts will be the consistent and comprehensive worldwide implementation of the GHS for improved chemical safety across all relevant sectors, and enhanced protection of human health and the environment.

ANNEX 1: LIST OF ACRONYMS

ADN	European Agreements Concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreements Concerning the International Carriage of Dangerous Goods by Road
ASEAN	Association of Southeast Asian Nations
CAS	Chemical Abstract Service
CSD	Commission on Sustainable Development
CWC	Chemical Weapons Convention
DESA	Department of Economic and Social Affairs (UN)
EC	European Commission
ECOSOC	Economic and Social Council (UN)
ECOWAS	Economic Cooperation of West African States
FAO	Food and Agriculture Organization
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GPA	Global Plan of Action
IATA	International Air Transport Association
ICCA	International Council of Chemical Associations
ICSCs	International Chemical Safety Cards
IFCS	Intergovernmental Forum on Chemical Safety
ILO	International Labour Organization
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
IPCS	International Programme on Chemical Safety
IPEN	International POPs Elimination Network
ITUC	International Trade Union Confederation
MDG	Millennium Development Goals
MOA	Memorandum of Agreement
NAFTA	North American Free Trade Agreement
NEPAD	New Partnership for Africa's Development
NGO	non-governmental organization
NIS	national implementation strategy
OECD	Organisation for Economic Cooperation and Development
PAN	Pesticide Action Network
POPs	Persistent Organic Pollutant
QSPTF	Quick Start Project Trust Fund (of SAICM)
SAICM	Strategic Approach to International Chemicals Management
SDS	safety data sheets
SMEs	Small and Medium Size Enterprises
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNITAR	United Nations Institute for Training and Research
UNRTDG	United Nations Recommendations on the Transport of Dangerous Goods
UNSCEGHS	UN Subcommittee of Experts on the GHS
UNSCETDG	UN Subcommittee of Experts on the Transport of Dangerous Goods
WHO	World Health Organization
WSSD	World Summit on Sustainable Development

Annex 2: The GHS and Key Agreed Sustainable Development Measures

Millennium Development Goals (MDGs)

The Millennium Development Goals (MDGs) define a set of time-bound and measurable targets for reducing poverty and other issues. Millennium Development Goal 7 is to “ensure environmental sustainability”. One of the recommendations of the MDG 7 task force includes "Reduce exposure to toxic chemicals in vulnerable groups" including to "Improve frameworks for chemical management."

In particular, it was suggested that:

> *National and municipal government authorities should establish and enforce legislation, policies, and programs to manage chemicals safely throughout their life cycles (including implementation of extended producer responsibility or product stewardship). Education and training on safe chemical management and good environmental practices and the organized and systematic involvement of different sectors of society on policy, legislation, and program formulation and implementation should be developed as a means of creating synergies and outreach. Enforcement of regulations requires training and employment of chemicals experts across all sectors. These efforts should draw on existing and emerging multilateral environmental agreements, including the Rotterdam, Stockholm, International Labour Organization, and Basel Conventions and the Montreal Protocol. In addition, governments and industries should support such international policy development strategies and actions as the Strategic Approach to International Chemical Management.*[13]

Protecting the Health of Marginalised Groups

Harm from exposure to chemicals can disproportionately affect traditionally disempowered persons, including women, children and the poor. Agenda 21, and Chapter 19 in particular, recognize the vulnerability of these groups to toxic chemicals. For example, chemical production facilities are usually located, like many manufacturing facilities, in close proximity to communities, which can include settlements where poverty is a pressing social problem. In developing countries, women and children can often be at most risk of exposure or misuse of chemicals. Use of unlabelled pesticides in the home, children playing in areas contaminated with or containing barrels of unknown substances, and mislabelled cleaning agents are all examples of real situations that could be improved by the effective implementation of a harmonized hazard communication system. The poor and illiterate are often the most at risk from the hazards of products labelled in another language or using confusing symbols. Successful implementation of a sound plan for chemical hazard communication can lead to direct benefits to the health of workers, consumers, and the environment through behavioural changes due to successfully conveying chemical hazards (*e.g.*, on labels and safety data sheets).

[13] For further information, please visit: <http://www.unmillenniumproject.org/who/task06.htm>.

Protecting water supplies and drinking water

Access to clean water has become one of the priorities on the sustainable development agenda. Yet, at the level of the end user, empty containers that had previously held chemicals often serve to carry and store water. Proper labelling of chemical containers combined with a basic understanding of potential hazards can help to ensure that old barrels are not reused for holding drinking water (as is often the case with unlabelled barrels) or that certain chemicals are not poured in to water supplies in the belief that they may "purify" the water or provide an apparently "easy" way to kill fish for eating.

Ensuring Safe Transport of Chemicals

Incidents of transport accidents, resulting in spills of hazardous chemicals and injuries to bystanders and emergency responders who were not aware of the hazards have been recorded in many countries. For example, in Zambia it has been documented that there is very little knowledge on the meaning of the symbols and numbers on transport vehicles. In one case, a derailed tanker caught fire killing about 20 people who did not understand the hazard warning that a flammable liquid was being transported. In another case, a tanker near the Zambian town of Kitwe spilled sulphuric acid, burning a driver to death.[14] National implementation of a comprehensive and harmonized labelling system in the transport sector, accompanied by appropriate awareness raising and training measures, based on the UNRTDG would significantly decrease the likelihood of these types of problems resulting from accidents or incidents.

The GHS as a Tool to Facilitate Trade of Chemicals

In addition to the direct benefits of protecting human health and the environment and its contribution to achieving broader sustainable development goals, implementation of the GHS has significant benefits to industry. As noted in the GHS document itself, one objective of the System is to "facilitate international trade in chemicals whose hazards have been properly assessed and identified on an international basis". Countries currently have different requirements for importing or exporting chemicals and chemical products resulting in different labels or SDS for the same product in different countries. Through variations in definitions of hazards, a chemical may be considered flammable in one country, but not in another. Companies wishing to be involved in international trade must be able to follow the changes in these laws and regulations and prepare different labels and SDS. In addition, given the complexity of developing and maintaining a comprehensive system for classifying and labelling chemicals, many countries have no system at all. Thus, given the reality of the extensive global trade in chemicals, and the need to develop national programs to ensure their safe use, transport, and disposal, it is recognised that the GHS provides the foundation for such programs.

[14] Banda, Samuel F. *National Chemical Hazard Communication Situation Analysis for Zambia* (Environmental Council of Zambia/UNITAR, 2001).

Annex 3: GHS in Relation to Other International Chemicals Management Efforts

While the GHS is an important international system in itself that countries may integrate into national and regional legislation and regulations, implementation of the GHS also facilitates the implementation of other international agreements concerned with chemicals management.

The Strategic Approach to International Chemicals Management (SAICM)

An overarching policy framework for international action on chemicals management**,** is the Strategic Approach to International Chemicals Management (SAICM). The importance of implementing the GHS is recognised in the Overarching Policy Strategy (OPS) of SAICM– GHS implementation is identified under the overall objective of "knowledge and information": (h) To promote implementation of the common definitions and criteria contained in the Globally Harmonized System of Classification and Labelling of Chemicals. GHS is also included as a SAICM work area in the Global Plan of Action (GPA), including eight distinct activities. In particular, SAICM GPA activity 250 states "Make available sufficient financial and technical resources to support national and regional GHS capacity-building projects in developing countries and countries with economies in transition." Participants at ICCM stressed importance of training and capacity building for implementing the GHS as part of SAICM, indicating further international recognition of the importance of countries and regions moving forward to include the GHS capacity building and implementation into overall chemicals management strategies and national SAICM implementation programmes.

Basel, Rotterdam and Stockholm Conventions

As part of a joint collaboration between UNITAR/ILO, in cooperation with the Secretariat of the Rotterdam, Stockholm and Basel Conventions, have developed a comprehensive guide on the linkages between the provisions of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and the provisions and requirements of the Basel, Rotterdam and Stockholm Conventions. This guide explains for each convention the relevant provisions and some of the implications of these provisions for key stakeholders for implementing the GHS. A copy of this resource is available from UNITAR.

The FAO International Code of Conduct on the Distribution and Use of Pesticides Update with FAO document

The 1985 International Code of Conduct, amended in 1989, was developed to address a number of difficulties associated with the use of pesticides in developing countries where adequate regulatory infrastructures are frequently lacking. It was recognized that in order to remain relevant the Code must evolve in order to reflect changing needs of countries and that there was a need to monitor progress in the observance of the Code. One of the basic functions of the Code is to serve as a point of reference, particularly until such time as countries have established adequate regulatory infrastructures for pesticides. The objectives of the Code are to set forth responsibilities and establish voluntary standards of conduct for all public and private entities engaged in or affecting the distribution and use of pesticides. The Code suggests how to distribute the responsibilities between government, industry and others. The twelve articles of the Code are supported by a set of detailed technical guidelines

that provide guidance on their implementation. Article 10 of the Code specifically addresses "Labelling, packaging, storage and disposal" of pesticides.

The FAO is in the process of integrating the principles of the GHS into its guidelines for pesticide evaluation, registration and labelling and into other documents, where appropriate. Information on FAO plans for implementing the GHS can be found at: www.unece.org/trans/doc/2006/ac10c4/UN-SCEGHS-11-inf16e.pdf

FAO Guidelines on Good Labelling Practice for Pesticides

The 1995 FAO "Guidelines on Good Labelling Practice for Pesticides" give guidance on the preparation of labels and specific advice on content and layout. They are intended for use by those in industry involved with label preparation and also by national regulatory personnel involved with the approval of labels and the specification or recommendation of suitable text and layout. The Guidelines contain four main sections with appendices. The first section identifies the main objectives and considerations in preparing a label. The second section identifies the information that must appear on a label. The third section deals with writing a label with maximum clarity and consideration of the level of knowledge of users. The Guidelines include pictograms that communicate key safety information to users in different countries and with varied levels of literacy. The fourth section discusses the establishment of toxicity and hazard classifications for a product. The appendices contain examples of labels, hazard statements, agricultural practice statements and other summaries of specific and generic label contents that can help to clarify the general text. These guidelines are currently in the process of being updated to incorporate the GHS where appropriate.

The WHO Recommended Classification of Pesticides By Hazard

This document sets out a classification system to distinguish between the more and the less hazardous forms of selected pesticides based on acute risk to human health (that is, the risk of single or multiple exposures over a relatively short period of time). It takes into consideration the toxicity of the technical compound and its common formulations. The document lists common technical grade pesticides and recommended classifications together with a listing of active ingredients believed to be obsolete or discontinued for use as pesticides, pesticides subject to the prior informed consent procedure, limitations to trade because of the POPs convention, and gaseous or volatile fumigants not classified under these recommendations. The WHO Hazard Classes have been aligned in an appropriate way with the GHS Acute Toxicity Hazard Categories for acute oral or acute dermal toxicity as the starting point for allocating pesticides to a WHO Hazard Class. The classification of some pesticides has been adjusted to take account of severe hazards to health other than acute toxicity. The GHS Acute Toxicity Hazard Category for each pesticide is now presented alongside the existing information. The full text of the classifications can be found at: www.who.int/ipcs/publications/pesticides_hazard/en/.

The WHO International Programme on Chemical Safety

The World Health Organization's International Programme on Chemical Safety (IPCS), has an established and internationally recognized leadership role in the preparation of risk assessments on specific chemicals and for developing and harmonizing hazard and risk assessment methods. These products include Concise International Chemical Risk Assessment Documents, International Chemical Safety Cards, Pesticide Data Sheets, and

Poisons Information Monographs These products are of particular benefit to countries that may lack high levels of toxicological expertise. IPCS has already started to begin work to maximize the consistency of its hazard and risk assessment products with the GHS for classification of hazards in order to enable national governments to use these products more effectively in implementing the GHS at the national level.

It is also a goal of IPCS to more effectively engage health professionals in its chemical assessment activities. This has significant practical benefits for the implementation and further development of the GHS particularly in relation to arrangements for precautionary statements and first-aid instructions that are found on both labels and safety data sheets. Also important is maintaining and continuing to develop the GHS to take account of hazards where there is a wealth of existing information on human exposures to chemicals in the home, in the workplace and via environmental media. Health professionals are often the first responders in cases of chemical exposures. These professionals have a long-standing practical experience of treating chemically exposed individuals and specific expertise in the recognition of symptoms and signs, their evolution and in the development and evaluation of cost-effective first aid and emergency medical management. This expertise and experience should be taken into account when harmonizing precautionary statements and safety sheets. Another area of cooperative global work where implementation of the GHS may become more important in the future is in the development of practical tools for controlling exposures to chemicals, particularly in small and medium size businesses. One of these tools, known as control banding is currently being developed by WHO and ILO through IPCS, to use the agreed hazard classifications of chemicals identified through implementation of the GHS together with information about exposure potential to identify broad, simple and effective control approaches. See: www.who.int/ipcs/.

ILO Chemical Convention 170 and Recommendation 177

The purpose of Convention 170 and Recommendation 177 concerning safety in the use of chemicals at work, adopted by the International Labour Conference (77th Session, 1990), is to protect workers against the risks associated with the use of chemicals at their workplace. It applies to all branches of economic activity in which chemicals are used. It covers all chemicals without exception and provides for specific measures in respect of hazardous chemicals. The Convention sets out the responsibilities of competent authorities, suppliers of chemicals, employers and workers. The Convention came into force in November 1993, and to date, nine countries have ratified it.[15]

The Convention requires that classification systems be established. In addition, it states that all chemicals should be marked to indicate their identity and that hazardous chemicals should be labelled so as to provide essential information on their classification, their hazards and the safety precautions to be observed. It also requires that chemical safety data sheets for hazardous chemicals be provided to employers. Chemical suppliers are responsible for ensuring that chemicals have been classified, marked and labelled and have chemical safety data sheets.

In 1993, ILO elaborated a “Code of Practice for the Safety in the Use of Chemicals at Work”, which provides guidance on the implementation of Convention 170. The practical

[15] The ratifying countries are: Brazil, Burkina Faso, China, Colombia, Mexico, Norway, Sweden, Tanzania, Zimbabwe.

recommendations of the Code cover all the elements necessary to ensure an efficient flow of information from manufacturers or importers to users of chemicals, and enable employers to formulate measures to project workers, the public and the environment. The subjects covered include classification systems, labelling and marking, chemical safety data sheets, design and installation, control measures, work systems, personal protection, information and training, medical surveillance, emergency procedures, monitoring and reporting, and confidentiality.[16]

ISO 11014-1: International Standard for Safety Data Sheets

In 1994, the International Organization for Standardization (ISO) developed a standard format for safety data sheets to create consistency in providing information on safety, health and environmental matters for chemical products. In order to establish uniformity, certain requirements are laid down as to how information on the chemical product shall be given (for instance the wording, numbering and sequence of the headings). To be in line with international efforts, the ISO has adopted the SDS 16-section format of the GHS.

Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemicals Weapons and on their Destruction (Chemical Weapons Convention [CWC])

The CWC, which came into effect on 29 April 1997, is aimed at eliminating an entire category of weapons of mass destruction under strict and effective control that is largely outside the scope of this summary. However, it also covers chemicals and activities not prohibited under the Convention. These include the so-called dual-purpose chemicals and their precursors. Indeed the exchange of scientific and technical information, and the production, processing and use of such chemicals for purposes not prohibited under the Convention, are permitted. Imports and exports of scheduled chemicals are also permitted subject to the conditions as laid down in the Convention and the relevant decisions that have been taken by the policy-making groups of the organization.

National implementation of the Convention involves adoption of measures by each State Party to fulfil its obligations under the Convention. In particular, it includes the enactment of necessary legislation to prohibit activities that are not permitted under the Convention, setting up National Authorities that are to serve as national focal points for implementation of the Convention, and bringing national regulations concerning trade in chemicals into line with the provisions of the Convention. In order to facilitate national implementation, technical assistance, training of personnel, and legal assistance aimed at capacity building are provided by the Technical Secretariat of the OPCW. As with other Conventions, activities are undertaken through the National Authorities that assist in briefing national scientific and technological communities and the public at large on the requirements of the Convention. Synergies between the CWC and the GHS could strengthen national chemicals management.

[16] More recently, the 89th session of the International Labour Conference adopted in June 2001 a Convention and Recommendation on Safety and Health in Agriculture. The Convention (No. 184) and Recommendation (No. 192) address a range of chemical safety issues including: importation; classification; packaging and labelling; disposal of chemical waste, obsolete chemicals and empty containers; risk assessment; and provision of adequate and appropriate information.

Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters

The importance of chemical hazard communication and workers right-to-know has been highlighted in various international initiatives and agreements, including the International Labour Organization (ILO) Chemicals Convention 170, Chapter 19 of Agenda 21, and by the IFCS. The topic is also indirectly addressed in Article 5 of the Aarhus Convention. One major development to support safe chemicals management is the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The GHS is a system for classification criteria for physical, health and environmental chemical hazards; and harmonized hazard communication such as pictograms, signal words, and precautionary and hazard statements for use on labels and safety data sheets (SDS). It is an important tool that supports effective communication of chemical hazards to users and the public. Further, countries and regions can use the GHS as a basis for establishing comprehensive chemical safety programs. The UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention) was adopted on 25 June 1998 in the Danish city of Aarhus at the Fourth Ministerial Conference in the 'Environment for Europe' process. The Convention is a major initiative to strengthen environmental democracy and it acknowledges that achieving sustainable development requires the involvement of all stakeholders. The first meeting of the Parties to the Convention that took place in Lucca, Italy, 21-23 October 2002, requested in Decision I/10 that the secretariat make efforts to develop capacity-building service as a means of adequately addressing the need for coordinated and systematic assistance in the implementation of the Convention, primarily in countries in transition.

Other International Agreements

Other international agreements and efforts exist that are relevant to sound chemicals management and GHS implementation, including the following:

- ILO Prevention of Major Industrial Accidents Convention 1993, No. 174;
- Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer;
- United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances

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ANNEX 5: ADDITIONAL INFORMATION SOURCES

UNECE Website

The Secretariat of the UN Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (UNSCEGHS) is housed at the UNECE: www.unece.org.

The UNSCEGHS and the UNSECTDG are under the CETDGGHS. These groups are found under the Dangerous Goods Transport Division of the UNECE at: www.unece.org/trans/danger/danger.htm.

From the UNECE GHS website, there is access to the latest edition of the GHS Purple Book: www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html.

IOMC: Assisting Countries with the Transition Phase for GHS Implementation

The purpose of the guide, *Inter-Organization Programme for the Sound Management of Chemicals (IOMC) to Support Implementation of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*, is to identify IOMC tools and resources aimed at helping countries prepare for and implement the GHS (including classification and labelling, hazard communication, and SDS, where appropriate). This document can be accessed at: www2.unitar.org/cwm/publications/cw/ghs/IOMC_GHS_Guide_Nov_08_Final.pdf.

WSSD Global GHS Partnership Annual Reports

Every year, UNITAR, ILO and OCED in the context of the *WSSD Global Partnership for Capacity Building to Implement the GHS*, publish an annual report summarizing GHS related activities in a particular year, as well as proposed future directions. These reports can be accessed at: www2.unitar.org/cwm/ghs_partnership/annualreports.htm

GHS Roster of Experts

The WSSD Global GHS Roster of Experts is a database of individuals with expertise related to the Globally Harmonised System of Classification and Labelling of Chemicals. These experts are available to provide support on training and capacity building activities in the application of GHS classification, labelling and safety data sheets in specific sectors and/or geographic regions. Their inclusion in this list is a voluntary effort and within their personal capacity. Experts in the roster are not necessarily official representatives of their respective organisations or endorsed by the Partnership. The experts in the database can viewed as an entire list or searched by specific criteria such as by type of expertise, geographic interest, language ability, etc. The GHS Roster of Experts can be accessed at: www.unitar.org/cwm/ghs_partnership/expertroster.htm.

Information Sources for Preparing Labels and SDS

There are many sources of information for generating labels and SDS. Some national chemical hazard communication systems have classification/labelling lists that indicate which label elements should be assigned to a given category of hazard. The classification

information required to generate a label can also be found in some on-line databases, which are often searchable by chemical name or Chemical Abstracts Service (CAS) number.

One source for validated (i.e. peer-reviewed) information on pure substances – International Chemical Safety Cards (ICSCs) – are available from the International Programme on Chemical Safety (IPCS).[17] An ICSC summarizes essential health and safety information on chemicals for their use at the "shop floor" level by workers and employers in factories, agriculture, construction and other work places. ICSCs are not legally binding documents, but consist of a series of standard phrases, mainly summarizing health and safety information collected, verified and peer reviewed by internationally recognized experts, taking into account advice from manufacturers and Poison Control Centres. Over 1400 ICSC are available in 16 languages online at: www.ilo.org/public/english/protection/safework/cis/products/icsc/.

The GHS itself does not include requirements for testing substances or mixtures. Therefore, there is no requirement under the GHS to generate test data for any hazard class. It is recognised that some parts of regulatory systems do require data to be generated (*e.g.*, pesticides), but these requirements are not related specifically to the GHS. The criteria established for classifying a mixture will allow the use of available data for the mixture itself and /or similar mixtures and /or data for ingredients of the mixture.

Tests that determine hazardous properties, which are conducted according to internationally recognised scientific principles, can be used for purposes of a hazard determination for health and environmental hazards. The GHS criteria for determining health and environmental hazards are test method neutral, allowing different approaches as long as they are scientifically sound and validated according to international procedures and criteria already referred to in existing systems for the hazard of concern and produce mutually acceptable data. Test methods for determining physical hazards are generally more clear cut, and are specified in the GHS.

The International Chemical Control Toolkit: A practical application of the GHS

The International Chemical Control Toolkit (ICCT) outlines a scheme for protection against harmful and dangerous chemicals in the workplace. It is designed for small and medium sized enterprises (SMEs) in developing countries. From the ICCT website, www.ilo.org/legacy/english/protection/safework/ctrl_banding/toolkit/icct/index.htm, a five-step process is described for finding relevant instructions (guidance sheets) for the safe handling of a substance under given conditions.

UNITAR GHS CD ROM

In response to the growing interest of countries to access resource documents relevant to chemical hazard communication and implementation of GHS, UNITAR has developed a CD

[17] While there are significant similarities between the headings in an ICSC and an SDS, they are nevertheless not the same. The SDS is the fundamental source of important health and safety information but, in many instances, can be technically complex. The ICSCs, on the other hand, set out peer-reviewed summaries of key data. The ICSC should not be a substitute for an SDS, as workers should be provided with information on the exact chemicals, the nature of those chemicals used on the shop floor and the risk posed in any given work place. However, the ICSC can be thought of as a useful information source for SDS development. The criteria and hazard information in the ICSCs are being aligned over time with the GHS.

ROM of GHS-related materials. This resource was created in the context of the *UNITAR/ILO GHS Capacity Building Programme* as a contribution to the *WSSD Global Partnership for Capacity Building to Implement the GHS*. All CD ROM materials can be accessed on the web at: www.unitar.org/cwm/ghs_library/. For a copy of this CD ROM, please contact UNITAR.

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