

SEA-Occ. Health-36
Distribution: General

Reducing Workplace Exposure through Risk Management Toolkit

*Report of the Regional Consultation
Chennai, India, 19–22 November 2007*



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1. Introduction

1.1 Relevance of the meeting to South-East Asia Region (SEAR) Countries¹

In May 2007, the World Health Assembly adopted Resolution WHA 60.26, “Global plan of action: workers health”², which recommended that countries put an emphasis on (1) a primary preventive approach to protecting workers’ health, (2) women and men in the informal economy, and (3) the integration of occupational safety and health issues with productivity. A scarcity of resources, both human and financial, hinders occupational health and occupational hygiene practices in developed countries but more so in developing countries. As a result, the World Health Report 2002³ found that during 2000, work-related risk factors were responsible for the loss of about 30 million Disability Adjusted Life Years (DALYs) globally. Countries in the South-East Asia Region lost over 8 million DALYs (27% of the total) and accounted for the highest regional burden of disease attributable to occupational risk factors.

Approximately 90% of the workers in the Region are employed in the informal sector, where occupational exposures to chemical and other hazards are often severe and little expertise or resources are available to assess and manage risks. The Occupational Risk Management Toolbox (ORMT), which was the focus of the Regional Consultation, Chennai, is designed for small and medium sized enterprises (SMEs) and does not require the onsite presence of experts. It is believed that this toolbox will be helpful to a large number of SME entrepreneurs in Asia.

¹ SEAR countries comprise Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, and Timor-Leste

² See http://www.who.int/gb/ebwha/pdf_files/WHA60/A60_R26-en.pdf

³See http://www.who.int/whr/2002/en/whr02_en.pdf

1.2 Participants and objectives

This regional consultation was sponsored by the WHO Regional office for South-East Asia and hosted by the WHO Collaborating Centre for Occupational Health, the Department of Environmental Health Engineering, Sri Ramachandra University, Chennai, India. The consultation was unique because it brought together approximately 35 persons from the Ministries of Labour, Ministries of Health, WHO Collaborating Centres in the Region, and country-level WHO offices in a combined session that included hands-on activities and field visits to small enterprises (see Annex 4 for the list of participants). The participants were from Bangladesh, Bhutan, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, and Thailand; and Vietnam in the WHO Western Pacific Region. In addition, representatives from WHO Headquarters, GTZ – German Technical Cooperation (Bonn), NIOSH – National Institute for Occupational Safety and Health (Washington DC), Occupational Knowledge International (San Francisco) and WPRO – WHO Western Pacific Regional Office (Manila) attended.

In his message to the consultation, Dr Samlee Plianbangchang, Regional Director for the WHO South-East Asia Region said that one of the greatest challenge in occupational health was in developing the programmes for informal sector where the resources for technical expertise were usually scarce (for full text of message please see Annex 1)

The main objectives of the consultation were to review experiences in implementing of toolkit approach in the countries, identify success factors and potential barriers for implementation, adapt the toolkit for regional use and develop future steps by all partners for adoption of the toolkit approach in risk management in SME⁴ in the Region.

The focus was on country-level activities that create incentives for SME owners to use the risk management toolkits to address work-related hazards, and on generating specific practical control solutions (in the form of guidance sheets) for the types of workplaces targeted. It was anticipated that these guidance sheets would be useful to countries in the Region and

⁴ SMEs, or Small and Medium Enterprises, in the context of this report generally refer to both enterprises within the formal economy (e.g., they are registered with the government) and women and men who work in micro and small enterprises that operate in the informal economy (e.g., these are enterprises generally not registered with the government), although the definitions that draw lines between the formal and informal economies are often blurred

for activities in other parts of the world where ORMT is being introduced and further developed. Summaries of the individual presentations made during the consultation are included in Annex 2 of the report. The full report and all presentations are posted on the website of the WHO Collaborating Centre at Sri Ramachandra University⁵.

The next section of this report provides background on the Control Banding concept and its evolution to ORMT. It is followed by a discussion of the specific challenges to improving occupational safety and health (OSH) conditions among SMEs in the Region, as identified by the participants. The challenges identified are then followed by opportunities and proposed actions, conclusions and recommendations, including suggested actions by WHO and other international agencies. Annex 3 provides the agenda for the consultation.

1.3 Evolution of ORMT

The ORMT concept is not new. While it has deep roots, the concept most notably grew within the pharmaceutical industry in the 1980s and 1990s when it was recognized that alternative methods were needed to control workers' exposure to new chemical substances that did not have occupational exposure limits (OELs) assigned to them. The traditional approach to controlling workers' exposures to hazardous materials consists of anticipation of potential hazard by skilled professionals as a first step followed by estimation of workers' exposures through sophisticated air sampling equipment and analysis, comparison of results of air sampling with OELs – the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) are examples of OELs – and recommending ways to control exposures if necessary. The methods employed by OSH professionals in the pharmaceutical industry, which involved 'banding' potential risks to workers by anticipating hazards and controlling them with a few well-established control methods, such as local exhaust ventilation, was different from the traditional approach. This alternate approach focuses resources on controlling potential hazardous exposures based on anticipated toxicity, rather than trying to measure airborne concentrations first.

⁵ <http://www.srmc-ehe.org.in/>

The limitations of the traditional approach of chemical exposure assessment and risk management extend beyond the pharmaceutical industry. There are rapidly increasing numbers of hazardous chemicals in commerce and insufficient data to set OELs for all of them. For example, there are fewer than 1,000 OELs for individual substances worldwide, yet there are hundreds of thousands of chemicals available commercially – and the list is growing. Further, it has been known and accepted for many years by the OSH community that SME owners and managers generally do not use OELs properly to protect workers in their enterprises. The reasons include insufficient knowledge and awareness of OELs (or how to apply them), scarce resources to hire OSH experts to measure workers' exposures to chemicals through air samples, and lack of incentives because SMEs usually have little regulatory pressure to comply with the OELs. That is, the probability of an SME being visited by a labour inspector is low, and in most developing countries the likelihood that a labour inspector knows how (or has the proper equipment) to measure and assess OELs is even lower.

2. International efforts

Broad-based literature and countless anecdotal reports indicate that there are frequent problems associated with workers' exposures to chemicals in the developing world, particularly among SMEs. WHO, ILO and other organizations interested in promoting international health, economic development, and decent work situations have devoted considerable efforts to apply simple, low-cost approaches to assess and control workplace exposures to chemicals. As a result, there is a rich history of control-focused guidance for SMEs. A successful example of a programme to assist SME is the ILO Work Improvement in Small Enterprise (WISE) programme.⁶ WISE has been used worldwide for nearly two decades and translated into many languages. WISE uses intuitive action-oriented checklists to guide owners or managers to control and improve working conditions, while increasing productivity at the same time.

Although there have been other programmes designed to empower SME operators to evaluate their own workplaces for OSH hazards and risks, with a focus on practical solutions rather than expensive measurements, probably the best resource available today for chemical exposures was

⁶ See <http://www.ilo.org/wise>

developed in the United Kingdom by the Health and Safety Executive. It is called COSHH Essentials and is available free on the Internet.⁷ COSHH Essentials is a qualitative approach to risk management for chemicals that groups risks into simple control bands. The website is interactive requiring input from SME operators to estimate potential worker exposures to hazardous substances. Based on the site-specific information entered, the programme recommends solutions to control problems through a series of guidance sheets.⁸

COSHH Essentials, which was developed for use by HSE – Health and Safety Executives in the United Kingdom, has spawned the creation of the International Chemical Control Toolkit. Although still in the development stage, this toolkit is available online and uses the concepts behind COSHH Essentials, but makes the interface and output more appropriate for SMEs in less developed economies⁹.

The German development agency (GTZ) has developed a programme called the Chemical Management Guide for SMEs that takes the International Chemical Control Toolkit a step further by establishing a simple systematic method to apply the toolkit and by linking improvements in the working environment to greater profits. This programme has been piloted in several countries and is being further developed. For example, the GTZ Chemical Management Guide was tested in Indonesia where it was found that small companies in general are not in a situation to apply sophisticated risk assessment because they have insufficient infrastructure and the information necessary for the risk assessment process the material safety data sheets (MSDS) is lacking.¹⁰

Smaller companies do not have systematic organizational procedures and documentation, there is also lack of priority and responsibility given to managing chemicals, and limited financial and human resources. The companies included in the GTZ project expressed an interest in simple criteria for identifying 'hot spots' and rules of thumb to reduce losses of chemical materials. They needed a more simplified approach than the one

⁷ See <http://www.coshh-essentials.org.uk>

⁸ For more discussion on COSHH Essentials and other tools that apply Control Banding methods to control chemical exposures, please see http://www.who.int/occupational_health/publications/newsletter/gohnet7e.pdf

⁹ The International Chemical Risk Management Toolkit can be found at <http://www.ilo.org/safework>

¹⁰ Tischer M. and Scholaen, S, Chemical Management and Control Strategies: Experiences from the GTZ Pilot Project on Chemical Safety in Indonesian Small and Medium-sized Enterprises Ann. occup. Hyg., 47 (2003): 571–575.

used by developed countries. Moreover, the level of computer literacy amongst the owners of small enterprises is also lower in developing countries. They therefore needed a non-online version of the Chemical Control Toolkit preferably translated in a local language. Many of these points were highlighted at the Utrecht WHO/IPCS Planning Meeting on Control Banding.¹¹

The toolkits for SMEs mentioned above are only a sample of those that rely on the premise that there are a few basically different approaches to control workplace hazards and risks and most have been solved before. That is, control solutions learned from the past can apply directly to similar situations today without the need for expensive (and often unavailable) measurement or person-to-person expert advice.

3. WHO initiatives

The toolbox concept is being promoted worldwide by WHO, the International Labour Organization (ILO), and various partner/collaborating organizations¹². A proposal was made during the WHO-sponsored meeting in Utrecht in 2004 to establish a global *OMRT* that would contain numerous toolkits available to help SMEs improve working conditions and manage OSH hazards and risks¹³. The toolkits should be easy to use and available to SME operators and others to provide generic, task, hazard, or substance-specific guidance. Advancements have been made in developing toolkits to manage different types of occupational risks. There are about 25 projects underway in numerous countries that are developing simple guidance for employers to reduce workplace risks. These projects have been developed by the WHO Collaborating Centres for occupational health, which work together in a common 2006-2010 Workplan¹⁴. These toolkits mostly target small businesses and address the following areas: chemicals, including specialized toolkits for individual chemicals, silica, and allergens causing bakers' asthma; sector-specific toolkits, including construction, health care

¹¹ WHO/IPCS Planning Meeting on Control Banding: The Practical Application in Developing Countries Utrecht, the Netherlands, June 13-16, 2004.

¹² See http://www.who.int/occupational_health/publications/newsletter/gohnet7e.pdf and http://www.ilo.org/public/english/protection/safework/ctrl_banding/utrecht_report.pdf for an overview of the toolbox concept and partner/collaborating organizations.

¹³ See Utrecht report at http://www.ilo.org/public/english/protection/safework/ctrl_banding/utrecht_report.pdf.

¹⁴ See http://www.who.int/occupational_health/network/2006compendium/en/index.html for a compendium of activities of the WHO Collaborating Centres in Occupational Health 2006-2010.

workers and health care waste; ergonomics, including agricultural ergonomics; safety; and psychosocial issues.

Support for the toolbox approach from experts is growing at international, regional, national, and local levels and by SME entrepreneurs, managers, and workers who have had opportunities to apply individual toolkits. The WHO regional consultation in Chennai brought together representatives from many countries in South and South-East Asia to examine ways to apply the toolkits to their situations.

The remainder of this report summarizes the challenges and provides the conclusions that emerged from the group discussions. The report includes specific recommendations and action steps to promote the toolbox concept throughout the Region.

4. Challenges

This section focuses on the challenges identified by the participants. Some of the identified misconceptions with regard to occupational health challenges can be summarized as follows:

- They are widespread and difficult to overcome by any program geared towards improving working conditions.
- They consist of beliefs that respirators are cheaper than and just as good as a ventilation system.
- If chemical exposures do not result in immediate health problems then serious long-term health effects are unlikely to occur.
- The management culture that short-term cost is the most important factor in purchasing and procurement decisions. They do not consider other factors such as health and safety, environmental impact and quality.

Special challenges of SMEs in developing countries include the following:

- Chemical safety data sheets, which are needed to apply COSHH Essentials or the International Chemical Control Toolkit, are typically not kept by (or available to) SME owners or managers.

- Legislation is limited to the formal sector of industry, it is weak and enforcement is poor.
- Coordination is minimal among government ministries that promote OSH or interact with SMEs.
- Regulatory pressures or perceived economic incentives for SME operators to improve working conditions are lacking.
- Some SME operators have little formal education.

5. Conclusions of the consultation

The participants developed the following conclusions:

- There is a need and a scope to apply the chemical and/or silica toolkit in all countries. The participants are ready to move on to concrete pilot projects; it is very important that the pilots are nurtured, supported and connected.
- The informal economy in SEAR countries at present is not in a position to use the online version of the international toolkit. Simple guidelines like the one provided by GTZ supported by training, if needed, is most appropriate. This could be upgraded stepwise.
- The World Health Assembly Resolution WHA60.26 on workers' health and ILO promotional framework for occupational safety and health¹⁵ form important political context for the implementation of the toolkits. WHO, ILO and GTZ can play an important role in fostering these experiences.
- Occupational health and safety in SEAR countries is at different developmental stages. India, Indonesia and Thailand have legal instruments (mostly for the organized economy) and expertise that, if expanded, could meet the challenges faced by the informal economy. Bhutan and Maldives have limited or no legal framework and lack expertise.

¹⁵ <http://www.ilo.org/public/english/standards/relm/ilc/ilc95/pdf/rep-iv-1.pdf>

- There are strong WHO Collaborating Centres in the Region and they can play a role in supporting pilot projects together with the WHO Regional Office and HQ.
- Countries can support each other to apply the toolkits, train the trainers, exchange information etc.
- There is a need for the creation of and more sharing of control (solution) guidance sheets.
- Material Safety Data Sheets (MSDS) for many chemicals are not available to the small enterprises.
- There are international programmes (e.g. ILO-WHO Global Programme for Silicosis Elimination) and national programmes (e.g. National Tuberculosis Control Programmes) which could be linked with primary prevention of workplace hazards.
- Employment of a large proportion of workers in the informal economic sector puts most workers beyond the purview of laws designed to protect their health and safety.
- Lack of awareness, resources and motivation has resulted in a serious threat to the health and safety of the workers. Even the simplest measures are seldom applied.
- There is an absence of formal coordination mechanisms between ministries of health, labour, agriculture, industry, environment etc.

6. Recommendations

The participants made the following recommendations:

Proposed action by the Countries

- Opportunities provided by the World Health Assembly Resolution WHA60.26, Global Plan of Action for Workers' Health should be used to create and strengthen political will for addressing the health and safety of workers.

- It is important to start small-scale pilot projects, creating an example that can be used to mobilize and motivate other companies. Start small, in one or very few companies that can be properly managed and controlled. The improvements may have to be step by step. It might be better to start with simple tools such as the GTZ chemical management guide and move to more comprehensive tools, depending on the settings and resources.
- It is crucial that the selected companies are motivated to work on improvement of work environment.
- The existing experiences of work improvement, particularly in the informal economy will be shared with other countries through the website of WHO Collaborating Centre at Sri Ramachandra University in Chennai.
- The economic argument needs to be developed further; however, the economic argument is not the only argument to improve the workplace.
- MSDS are not available for many chemicals. It is anticipated that international adoption of the United Nations *Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*¹⁶ will help to address this issue. Ministries of Labour and medium and large enterprises can help to make MSDS available. The Ministry of Labour should facilitate sharing of MSDS by larger enterprises with small feeder and other industries. The corporate social responsibility argument should also be used.
- Depending on the national and local situation, intermediaries will need to be identified and used to scale-up the pilot projects (e.g. local government, nongovernmental organizations, universities, associations, etc) supported by WHO, ILO and the countries.
- Interministerial, sectoral and stakeholder coordination, and the involvement of employers' and workers' organizations (even informal ones) will be necessary for the success of the projects.
- Public-private partnerships are needed to address the huge problems in the informal economy. Companies need to be held accountable (at least to a certain extent) for their supply chain. Corporate social

¹⁶ http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

responsibility in the area of OSH needs to be encouraged. Voluntary certification systems may be useful.

- Even in the informal economy there are organizational structures (for example, tannery associations, small chemical manufacturers' associations, etc). They need to be used in addressing the problems.
- Training is needed at all levels; professional training for university-level persons and technical experts, as well as training for employers, for workers, for inspectors from the labour department, etc.
- Clearer guidelines should come from international organizations on the need for training.
- Chemical hazards are very important; however, in a workplace many safety and health hazards are present. It is valuable to start small and be focused, recognizing that after trust has been gained, everything is possible.
- There are networks which can support the creation of focal points and improve coordination, (e.g. SME specific programmes).
- The collaboration between the health and labour sectors, and the involvement of other sectors should be improved in all countries. A focal point in each concerned ministry can help to improve coordination and collaboration.
- Good practices and examples were identified in the Region, showing that it is possible to make a difference with few scarce resources. More examples exist and can be identified.

Recommended action by WHO and other international agencies

The participants also gave the following two recommendations regarding WHO and other international agencies:

- (1) WHO Collaborating Centres, WHO, ILO and GTZ should provide necessary technical support to facilitate the use of the toolkit approach.
- (2) WHO country offices, Regional offices and HQ should facilitate exchange of experiences within and between the countries.

7. Acknowledgements

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Annex 1

Message from Regional Director WHO, South-East Asia Region

The World Health Report 2002 stated that during the year 2000, work-related risk factors were responsible for the loss of about 30 million Disability Adjusted Life Years (DALYs) globally. Countries in the South-East Asia Region with a loss of over 8 million DALYs (or about 27% of the global) had the highest burden of disease attributable to occupational factors. Exposure occurs mostly in the informal sector of industries. The traditional method of workplace exposure control consists of risk assessment through measurement of the hazardous substances in the work environment followed by identifying the appropriate control technique. This is a very resource-intensive approach requiring onsite technical expertise and expensive equipments for accurate measurement of the hazardous substances which is beyond the reach of the informal sector of industry.

One of the greatest challenges in occupational health is to develop programmes for the informal sector of industry where the resources and technical expertise are usually scarce. To meet this challenge, the international chemical control toolkit was developed by the International Occupational Hygiene Association as a contribution to the International Programme on Chemical Safety (IPCS) (comprising ILO, WHO and the United Nations Environmental Programme). These toolkits are user-friendly, simple matrices that provide the user with guidance for controlling exposures to hazards. If oriented to these well-defined and systematic procedures, people with little or no occupational hygiene experience can be trained to implement the hazard assessment process and understand the sound occupational hygiene advice in the form of guidance sheets.

The simplicity of the toolkits is the outcome of the extensive and complex work done by experts behind the scenes who analyzed the hazard, developed a predictive model for exposure, determined the best methods for exposure control and developed guidance documents. This toolkit which is now successfully used in the informal sector of industry in many developed countries will meet the needs of small and medium scale industries in the Region. The WHO office for South-East Asia is privileged to organize the first regional consultation on this control toolkit considering the overwhelming occupational health problems in informal sector of

industries. This will help in sensitizing the stakeholders for using this toolkit approach and will open ways to its greater adaptation in the Region. A version adapted to the regional needs can be developed only through consultations between users and experts. The participation of experts from WHO, ILO, GTZ and the National Institute of Occupational Safety and Health (NIOSH), USA will greatly facilitate the discussions.

While this is a new strategy for controlling occupational hazards, implementation challenges exist. No matter how impressive the information, it is only valuable when it can be made practically useful at the local level. Therefore, implementation systems must be established at every level, including international, national and the local enterprise level. Developing a strong network of champions in every country, communicating and effectively publicizing the programme are important to promote and expand the usage of the toolkits.

I am sure the toolkit approach will provide a powerful instrument for solving the occupational health problems of workers in the informal sector.

Annex 2

Summary of the presentations

Bangladesh: About 60% of the working population is engaged in agriculture, about 11% in industry and the rest are in services. ILO estimated about 19,000 deaths due to work-related diseases and poisoning in 2000. Exposure to silica and chemicals occur mainly in over 500 small enterprises. These enterprises are beyond the purview of the factory inspection department. The workers face long hours of work with no control measures. Preliminary studies in stone crushing and lead battery recycling sites have shown significant exposures to silica and lead respectively. The new legislation on occupational health and safety provides an opportunity for introduction of the toolkit management approach in small and medium-scale industries. The ministries of labour and health are engaged in education and awareness programmes related to occupational health and safety in small and medium enterprises. These programmes can activate initiatives for primary prevention.

Bhutan: About 90% of the workers are engaged in agriculture. Industrialization has started very recently. There are 18 mines, 181 processing units and 62 small factories with the potential of silica and chemical exposures. The mining is of mainly of dolomite and lime stones. Legislation on occupational health and safety introduced in 2007 provides an opportunity for primary prevention particularly in newly developing factories. The country is not a member of ILO and therefore will need greater support from WHO.

Silica exposure in small silica flour milling in India: Owing to the widespread applications of silica flour in industry, silica flour mills are to be found in developed as well as developing countries. In India, the silica flour mills are mostly small in size engaging on an average 10 – 25 workers. The manufacturing process includes a jaw crusher, hammer mill, rotary screen, magnetic separator, screening(vibrator) and bagging. Respirable quartz levels near jaw crusher, hammer mill and screening/bagging were 3.29, 12.25 and 8.22 mg/m³ respectively. As a result of joint intervention by factory owners, the National Institute of Occupational Health Ahmedabad and the factory inspectorate, dust control devices on the crusher, hammer mill and bag filters were installed which led to a decrease in the dust levels by 75.12 %-85.71 %. However, the residual dust levels were much

higher than the prescribed maximum levels. International collaboration of experts from Cincinnati University (USA) and NIOSH (USA) was sought under the Indo-US collaborative programme on environmental and occupational health to further reduce the dust levels. Specific dust control measures recommended by the national and international experts at a workshop were endorsed by all stakeholders including employers. As a result, about 20 quartz mills are undergoing renovations. Experience with silica mills indicates that for successful intervention, involvement of all stakeholders is necessary. Demonstration of feasible intervention technology and international collaboration may be required.

Indonesia: The total workforce consists of 106 million workers of which about 68% are in the informal sector; 45% in agriculture and 20% in manufacturing industry, construction, mining and quarrying. Laws covers all workplaces and there are provisions for hazardous and toxic substances management. Hazardous chemicals are widely used in SMI. There are no labels or MSDS suggesting potential danger of exposure of the workers and community. A survey by the Ministry of Health in 2005 showed high prevalence of work-related morbidity in small industries. The separate Directorate of OSH and health standard inspection under the Director General labour inspection and the National Institute of Industrial Hygiene and Occupational Health with five regional centres offers an opportunity for implementation of ORMT approach. The declaration of occupational health strategy and national policy by the Ministry of Health in 2006 with an objective of reaching the informal sector will encourage the use of ORMT.

Maldives: A workforce of nearly 110,000 is employed mainly in fisheries, the tourism-related industry, construction and manufacturing industry. There are no OSH laws and no data on occupational risk assessment is available. Awareness on safety at the workplace is lacking. Employment Law is expected by 2008 which will facilitate for implementation of OHS and the Compensation Act. A high literacy rate including computer literacy, and ongoing awareness programmes offer the opportunity for intervention.

Myanmar: The workforce consists of 28.63 million workers (2006, source – Department of Labour). Agriculture contributes 52% to the GDP; other sectors include livestock and fisheries and manufacturing. There is progressive transition from an agriculture-based economy to an industry-based one since 1992. Chemicals are mostly imported for agriculture, textiles, petrochemicals, general industries, pharmaceutical and public health purposes. Exposures in the informal sector are moderate to severe. Simple, good work practices prevalent in the formal sector could be applied in the informal sector. The division of occupational health

under the ministry of health can catalyze the process using existing initiatives on healthy workplaces and health promotion activities in some workplaces.

Nepal: The total workforce consists of about 11 million of which 90% is engaged in agriculture. There is a policy provision for occupational health and safety but the implementation is poor. Political instability and lack of awareness amongst the major stakeholders are major challenges.

Sri Lanka: Chemicals are not manufactured in Sri Lanka but imported, formulated and packed. Out of 280,000 workers in the registered factories, about 193,000 (69%) are employed in micro industries with an investment of less than 2 million Sri Lankan Rupees. (1 USD ~ 100 SRL rupees). Lack of control on importing and exporting substandard chemicals because of inadequate testing facilities, poor working conditions and exposure of non-working family members in household industries are the main challenges. Examples of good work practices are available in the battery repair industry and in quartz factories. Existing legal instruments and managing mechanisms for the safe handling of hazardous chemicals and the new Factories Act covering all workers provides an opportunity for ORMT approach.

Silicosis situation in Thailand (2005 – 2007): In 2005, the Ministry of Public Health through its rural network carried out a silicosis survey in 27 provinces, 157 workplaces (mostly stone crushing) and of 4,782 workers. The survey consisted of chest x-ray (in 2,219 or 46% workers), lung function test and silica dust exposure determination. In 125 workers (5.6 %) radiological changes suggestive of silicosis were reported. The air-borne silica levels exceeded permissible limits in two of the provinces where silica dust levels were measured. Three more cases of silicosis were also reported in September 2007. For prevention and control of dust exposure in stone crushing industries, the Department of Primary Industries and Mines initiated a project to design and demonstrate the dust control system in stone crushing industries. After the trial of the designed system, it was revealed that it could effectively reduce the dust. Therefore, this system was extended under the purview of the Department of Primary Industries and Mines to other industries. Health education programmes were also carried out.

Vietnam – Risk management in the informal sector – Vietnam’s experience of a traditional pottery village: The National Institute of Occupational and Environmental Health (NIOEH), Vietnam, carried out a study in three villages where about 90% of the population is dependent on pottery-related activities carried out in the informal sector of industries. The objectives of the study were to

better understand the informal sector, apply pilot interventions and learn and recommend suitable intervention measures.

Manufacturing processes are carried out from within the residential premises resulting in exposure of all household members including infants, old and sick people. An industrial hygiene study showed significant exposure to air-borne dust, chemicals and noise and ergonomic problems. A pre-intervention survey showed a lack of awareness with regard to occupational hazards and chemical safety resulting into unsafe work practices. Post training survey showed significant improvement with regard to the knowledge on work environment, health and risk management. The intervention was in line with ILO's WISE (Work Improvement in Small Enterprises). It was concluded that there is a need for effective interaction between workers, managers and the occupational health institute for confidence building; feasible methods of intervention are existing; television and radio can be good tools for training/education of workers. Voluntary participation with awareness is better than forceful enforcement.

S. Sankar – Sharing the experiences as trainers of GTZ Chemical Management tool from South India: The aim of the training was to build the capacity of the industries in protecting the health of workers and environment. Following the training as master trainers, Sri Ramachandra University conducted training in chemical management in different industrial clusters in Vietnam, and India. A brief contents and methodology of training was explained in addition to the Non-product output (NPO) concept that was used as a motivating factor for the industries to participate in the training. All the participants were given an opportunity to converse with and within the groups. Some of the cross-sectional and regional issues like lack of storage space for chemicals, need for expertise in chemical management, use of obsolete technologies, use of inappropriate and improper personal protective equipment and customized requirements of chemicals were presented. The training was used to guide the industries to improve chemical management and the choice of intervention was decided by the industries. Some of the simple and cost-effective interventions introduced in some industries were shared with the participants with “before and after” training pictures. The benefits and limitations of the training were also shared. The role of Sri Ramachandra University as a focal point for trainers in chemical management in Southern India was also highlighted.

Dr Kalpana Balakrishnan, Dr Suryanarayan – Development of a control banding toolkit for organised sector industries in Tamilnadu: To meet the challenge of chemical risk management, several projects have been initiated by WHO to develop risk assessment toolkits for use by industries. While the common

“control banding” toolkits describe the type of control that may be required, often employers find it difficult to install controls and verify their efficiency without additional supplemental information. This presentation describes the development and principles behind one such toolkit developed jointly by the Sri Ramachandra University and the Central Leather Research Institute. The toolkit is a simple and easy-to-use, assessment menu-driven package which suggests a comprehensive hazard control method taking into account the properties of the chemical and the environmental conditions in which the chemical is being operated. It provides technical guidance on the design of control methods with detailed specifications that may be used by employers to assess requirements for installing controls. The toolkit is designed in JAVA [www.java.sun.com] using jdk1.3 version [www.oopweb.com] and accompanying databases have been created in SQL 2000 Professional version. The database has a collection of Antoine coefficients, molecular weight, other relevant physical chemical properties and TLV's of 320 most frequently used chemicals in different industries in this area. Drop-down options in the package have been specifically designed for operations commonly performed in the identified industrial areas. Several illustrations complement chemical-specific information to allow the employers/workers to judge the nature of the process and consequently better estimate the corresponding hazard, exposure and control bands. Pilot exercises have been implemented in 13 industrial units in the greater Chennai area and feedback is expected to provide inputs to customize the toolkit to the local industry requirement.

Dr Marilyn Fingerhut – WHO Collaborating Centres 2006-2010 Workplan:

The WHO Collaborating Centres work together in a common 2006-2010 workplan. There are 24 projects underway in numerous countries that are developing simple guidance for employers to reduce workplace risks. These toolkits mostly target small businesses and address the following areas: Chemicals, including specialized toolkits for various chemicals, silica, and allergens causing bakers' asthma; sector specific-toolkits, including construction, health care workers and health care waste; ergonomics, including agricultural ergonomics; safety; and psychosocial issues.

Some illustrations of projects and the progress to date, organized by continent are provided,. In Asia, the Sri Ramachandra University in Chennai has been working with partners on the management of chemicals, using the German GTZ approach. The National Institute of Occupational Health, India, has been working on guidance for silica flour milling, stone crushing, and agate grinding, situations also being addressed by NGOs including OK International and Peoples' Union for Civil Liberties. In Singapore, the Ministry of Manpower (MOM) is expanding the use

of a field-tested chemical control toolkit in small and medium enterprises. MOM also is developing a web-based psychosocial health assessment tool to assess and manage stress and mental health at work. The Korean Occupational Safety and Health Agency (KOSHA) is developing web-based guidance to control chemicals used widely by SMEs in Korea. Both WHO Collaborating Centres for Occupational Health in China are working on chemical control toolkits. The National Institute for Occupational Safety and Health and Poison Control (NIOSHPC) translated the UK COSHH Essentials into Chinese. The Fudan University in Shanghai has published a review paper in a Chinese journal, and is working with several volunteer factories. A toolkit for health care workers has been piloted in Vietnam.

In the Americas, control of silica is central to a broad regional effort under the ILO/WHO Global Programme to Eliminate Silicosis. The Chilean Institute of Public Health, FUNDACENTRO in Brazil, and NIOSH (US) have developed guidance to control silica in brickmaking, stonecutting, and mining. Brazil's FUNDACENTRO has also developed guidance for printmaking facilities and healthcare wastes. NIOSH in the U.S.A. has a useful webpage on 'control banding' (qualitative risk management) to share information. The Canadian Industrial Accident Prevention Agency (IAPA) is developing, with the International Occupational Hygiene Association (IOHA) and partners in The Netherlands an Injury Prevention Management Toolkit (Barrier Banding).

In Europe, the UK's Health and Safety Executive COSHH Essentials and Germany's GTZ Chemical Management Guide showed the value of developing simple guidance. Today, new leaders in the control of chemicals are in The Netherlands, with Stoffenmanager and a database of guidance now available in English. Leaders in psychosocial risk management are at the University of Nottingham in the UK, with partners in Finland, Italy, Germany and Spain.

In Africa, the National Institute for Occupational Health is developing guidance to manage risks of health care workers and to control silica exposures in quarries. The University of Cape Town is developing a risk management toolkit that includes engineering controls, work procedures and a surveillance system to reduce exposures to flour dust that causes allergies and asthma in bakers.

Dr. Gerry Eijkemans – WHO Global Plan of Action on Workers' Health and Occupational Risk Management Toolbox (Control Banding): In May 2007, the World Health Assembly in its sixtieth session adopted a resolution entitled "Workers health: global plan of action"¹⁷ endorsed by the health ministers of the

¹⁷ http://www.who.int/gb/ebwha/pdf_files/WHA60/A60_R26-en.pdf.

member countries of world. The main objective of the resolution is to improve the health of all workers. It underlines the primary prevention approach in protecting workers' health. This is particularly challenging in small and medium sized enterprises which need feasible and acceptable solutions. The occupational risk management toolbox with toolkits for chemical, silica and psychological problems offers a promising possibility particularly for the enterprises with limited resources and expertise. This approach also called "control banding". It emphasizes risk management over risk assessment. WHO is now working with several other partners like the International Programme on Chemical Safety (IPCS), ILO, International Occupational Hygienists Association, (IOHA) Health and Safety Executives (HSE), UK, National Institute of Occupational Safety and Health (NIOSH), USA and GTZ, Germany. An International Technical Group (ITG) consisting of the above-mentioned partners has been established to facilitate the further development and implementation of the toolbox. At present, WHO through its partners is implementing this approach in many developing countries like Benin, Brazil, India and South Africa. Successful implementation of the toolkit in chemical exposures has led to the exploration of this approach in other areas like psychosocial, ergonomics and noise exposure.

Dr. Alberto Camacho – GTZ Chemical management guide: The GTZ strategy (for bringing the existing information of risk management toolboxes like COSHH and the International Chemical Control Toolkit to the SME level) builds on:

- (1) Improvement of chemical management in order to – gain cost savings – reduce hazards – improve safety
- (2) Training for safe handling of chemicals in small and medium-sized enterprises
- (3) Training of trainers with local master trainers (as those already available at the WHO Collaborating Centre at Chennai or in Hanoi)

For this purpose a Chemical Management Toolkit was developed. It consists of

- GTZ Chemical Management Guide
- 17 Chemical Safety Tools
- GTZ Chemical Management Manual for Trainers

The GTZ Chemical Management Guide is composed of two modules: “hot spots” and “inventory”. The companies elaborate action plans according to their needs based on each module. Further, 17 different chemical safety tools contain key information on different topics permitting a better understanding of specific chemical topics.

To guarantee systematic training of future trainers a Manual for Trainers has also been developed. The role of the manual is:

- Compilation of methodology
- Compilation of exercises and handouts
- Compilation of power point presentations
- Compilation of other relevant materials for improving and better understanding chemical safety

Dr. Perry Gottesfeld – Possible Applications of the Toolkit Approach for Reducing Respirable Silica with Water Spray Applications in Stone Crushing Mills: Respirable crystalline silica dust generated during stone crushing operations has been linked to chronic lung disease and increased risk of tuberculosis. In India, most stone crushing mills operate without any dust control or containment systems. An investigation in the Khurda District of Orissa demonstrated a reduction in respirable crystalline silica following the introduction of water spray equipment in over 40 mills. Average respirable quartz and cristobalite levels declined by 82% and 69%, respectively, after water spray controls were installed. This finding suggests that relatively inexpensive modifications that are available in the local market can be effective in reducing silica exposures. Widespread adoption of this simple control technology by stone crushers in India could have a positive public health impact. A toolkit could be an important means to bring this information to stone crusher mill owners through training and outreach programmes.

Summary of the industry visit (21 November 2007)

The objective of the field visit was to assess the effectiveness of the application and implementation of the Chemical Management Toolkit in a small industry unit and also learn about common challenges faced by some of these units in implementing the same from an employer’s perspective.

The participants visited two small-scale tanning and leather industry units in the Pallavaram Industrial Cluster of Chennai, Tamil Nadu. Amongst these two units, one had already implemented the Chemical Management Toolkit and the other had been identified as an interested potential partner for applying the toolkit.

The industry representatives allowed the participants to visually observe the process of fat liquoring, staking, sammying, setting, drying and shaving being carried out while processing leather in these units.

The participants observed the following interventions made in the industry in which the Chemical Management Toolkit had already been implemented.

- Installation of common exhaust ventilation system
- Good Labelling System in the containers
- Collection of MSDS for most of the chemicals being used in the industry
- Provision of Personal Protective Equipment (PPE) in areas like Fat Liquoring
- Good organization of chemicals in areas like stores

The other unit was used to demonstrate identification of possible hotspots by getting the information on the following aspects:

- Name of the chemicals used in the workplaces
- Handling of chemicals
- Labelling of these chemicals
- Existing MSDS in the company
- Personal Protective Equipment (PPE) used
- Ventilation provided

Participants used the observations recorded in the visit for a discussion on how to initiate practical implementation of toolkits at workplaces.

Annex 3

Agenda

Day 1 – 19 November 2007

| | |
|-------------|--|
| 0800 – 0830 | Registration |
| 0830 – 0910 | Opening Ceremony |
| 0830 – 0835 | Welcome – Dr. S. Rangaswami, Vice Chancellor, SRU |
| 0835 – 0845 | Opening Address on behalf of the WHO Regional Director for the SEAR – Dr. Habib Saiyed, WHO SEAR |
| 0845 – 0850 | Remarks – Dr. Hisashi Ogawa, WHO WPR |
| 0850 – 0855 | Remarks – Dr. Marilyn Fingerhut, CDC/NIOSH |
| 0855 – 0900 | Introductions |
| 0900 – 0905 | Honouring the delegation-Shri. V. R. Venkatachalam, Chancellor, SRU |
| 0905 – 0910 | Vote of Thanks – Dr. Kalpana Balakrishnan, HOD, WHO-CC, SRU |
| 0910 – 0940 | Refreshments/Group Photograph |
| 0940 – 0950 | Election of Officers of the meeting (Chair, Vice-Chair, Rapporteurs) |
| 0950 – 1005 | Introduction to the Meeting: Objectives, Programme of Activities – Dr. Habib Saiyed, WHO SEAR |
| 1005 – 1020 | Global Perspectives – Dr. Marilyn Fingerhut, CDC/NIOSH |
| 1020 – 1120 | Introduction to the Concept of ‘Control Banding’ and the Occupational Risk Management Toolbox: History, Rationale, Examples – Dr. Richard Rinehart, Temporary Advisor, WHO |
| 1120 – 1130 | Overview of the Café Small Group Discussion Method – Dr. Richard Rinehart, Temporary Advisor, WHO |

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|-------------|--|
| 1130 – 1230 | Small Group Discussions: Café Method Question: How can the Occupational Risk Management Toolbox address specific goals or important areas identified within the SEAR Countries? Discuss the question in two 25-minute rounds of small group conversations, as described below. Round 1, each table, with 4-5 people; Has a designated “host” to record ideas. Discusses the question for 25 minutes. Round 2: Table hosts stay at their tables. Other table members travel to different tables. Each new table continues the conversation on the question for an additional 25 minutes. |
| 1230 – 1330 | Lunch |
| 1330 – 1400 | Reporting Back from the Café Discussions. Facilitator: Dr. Richard Rinehart, Temporary Advisor, WHO |
| 1400 – 1430 | GTZ Experience with a Chemical Toolkit in Asian Countries – Dr. Alberto Camacho Henriquez, GTZ, Bonn, Germany. |
| 1430 – 1500 | Use of the Toolbox Approach in Small and Medium Enterprises in the Chemical Industry in India Dr. Kalpana Balakrishnan, SRU |
| 1500 – 1515 | Coffee/Tea Break |
| 1515 – 1545 | Possible Application of the Toolbox Approach for Reducing Respirable Silica in Indian Stone Crushing Enterprises Dr. Perry Gottesfeld, OKI. |
| 1545 – 1615 | Use of Toolbox Approach in Small Silica Milling Units in India Dr. L J Bhagia, NIOH |
| 1645 – 1700 | Discussion |
| 1700 | Adjourn |

Day 2 – 20 November 2007

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| 0830 – 0900 | Summary of Day 1 Discussions and Plans for Day 2 Dr. Habib Saiyed, WHO SEAR |
| 1045 – 12:30 | Discussions |
| 1230 – 1330 | Lunch |

1330 – 1530 Working Group Discussions developing projects at country level.
(What are the positive examples on risk management that you have heard these 2 days (20 minutes); What pilot project can you envision in your country, preferable together with other countries, supported by the SEARO office and others; in order to make the pilot work, what do you need to start. (think short term, practical, DON'T think big money coming in from the outside)

Group A: Chemical exposure situations; Group B: Chemical exposure situations; Group C: Silica exposure situations.

1530-1545 Coffee Break

1545-1645 Background information and Instructions for Field Trip

1700 Adjourn

Day 3 – 21 November 2007

0830 – 1300 Field Visit to two Enterprises – one where the Chemical Toolkit has been previously applied and other without any controls.

1300 – 1400 Lunch

1400 – 1500 Reporting Back from the Field Visit

Facilitator: Dr. Alberto Camacho, GTZ

1500 – 1515 Coffee / Tea Break

1515 – 1545 Synthesis of the Output from the Working Groups.

Facilitator: Dr. Gerry Eijkemans, WHO HQ

1545 – 1645 Discussion on the Way Forward in the SEAR; Pilot Project Development; Commitment to Action. Facilitator: Dr. Habib Saiyed, WHO SEAR

Day 4 – 22 November 2007

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|-------------|---|
| 0830 – 0930 | Summary of Workshop Proceedings Dr. Habib Saiyed, WHO SEAR; Dr. Kalpana Balakrishnan, Temporary Advisor, WHO; Dr. Richard Rinehart, Temporary Advisor, WHO |
| 0930 – 1230 | Demonstration and Training COSHH Essential online Dr. Richard Rinehart, Temporary Advisor, WHO GTZ Chemical Management Guide Dr. Alberto Camacho Henriquez, GTZ Chemical Management Toolkit SRU |
| 1300 | Adjourn |

Annex 4

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