

The Global Occupational Health Network



ISSUE No. 7

SUMMER

GOHNET NEWSLETTER

Dear GOHNET members and future members,

This special edition 7th GOHNET Newsletter will inform you about new practical tools to assess and manage risks at workplace level based on the concept of "Control Banding". GOHNET Issue 5 introduced readers to one of these control banding tools, the International Chemical Control Toolkit. This Toolkit responds to the need for practical risk assessment and management approaches that can be applied across the board for all the chemicals used in a workplace, rather than a chemical-by-chemical approach based on occupational hygiene measurements for the fraction of chemicals where occupational exposure limits have been set.

Scarcity of resources, both human and financial, are an issue in the occupational health and occupational hygiene practice globally. The Toolkit is being developed for use particularly in small and medium-sized enterprises in developed countries, and in developing countries. The benefits of this approach have been demonstrated in the UK, where the concept has been successfully implemented as the "COSHH Essentials".

Recognizing that chemicals represent only one of a number of hazards in a workplace, this GOHNET issue describes how the control banding concept can be used to build additional tools for inclusion in an "Occupational Risk Management Toolbox". An obvious addition would be an ergonomic toolkit to target musculoskeletal disorders, which are a major problem world wide.

The Occupational Risk Management Toolbox is an exciting development with great potential for managing workplace risks. However there is much work to be done by a range of stakeholders, including those in industry, government, employers, unions, research institutions, etc. A recently agreed Global Strategy for the Implementation of the Toolbox is included in full in this issue of GOHNET as a charge to the occupational community to work collectively to bring this to fruition.

Enjoy your reading.

Evelyn Kortum (kortummargote@who.int), Editor
World Health Organization

Occupational & Environmental Health Programme
Department of Protection of the Human Environment
20 Avenue Appia; CH - 1211 Geneva 27

Fax: +41.22.791 13 83

www.who.int/oeh

Abbreviations:

CB	Control Banding
GHS	Globally Harmonized System
ITG	International Technical Group
IPCS	International Programme for Chemical Safety
MSDS	Material Safety Data Sheets
OELs	Occupational Exposure Limits
SMEs	Small and Medium Enterprises
Toolbox	Occupational Risk Management Toolbox

Reducing worker exposure by using the Occupational Risk Management Toolbox

Elaine M. Papp (papp.elaine@dol.gov), OSHA
Gerry Eijkemans (eijkemans@who.int), WHO, Occupational Health Team
Carolyn Vickers (vickersc@who.int), WHO, IPCS

Introduction

People worldwide face occupational health and safety hazards daily. Over the years, the global occupational hygiene community has worked diligently to develop ways to protect workers in both developed and developing nations, in workplaces of all types and sizes. The greatest challenge has been to develop occupational health programs that are feasible in developing nations, as well as in small and medium enterprises (SMEs) where resources and technical expertise may be scarce.

The Occupational Risk Management Toolbox (Toolbox), has been developed internationally and provides a creative solution to this difficult problem. The Toolbox is envisioned to contain a variety of Toolkits, which are semi-quantitative risk management tools; each designed to address a specific occupational hazard. The first toolkit is the International Chemical Control Toolkit (Chemical Toolkit), which was developed for the International Labour Organization (ILO) by the International Occupational Hygiene Association (IOHA) as a contribution to the International Programme on Chemical Safety (IPCS) (comprising the ILO, the WHO and the United Nations Environment Programme). The underlying concept for the Toolkits is commonly called "control banding." It is an occupational risk assessment and management instrument for use without on-site technical experts and expensive exposure measurements. The control banding concept has been used to address chemical hazards by many organizations: governmental, corporate and non-governmental.

Due to the success of control banding of chemicals, particularly COSHH Essentials, a tool designed by the Health and Safety Executive (HSE) of the United Kingdom (UK), the Chemical Toolkit was developed. As it was underway, the global occupational health and safety community

IN THIS ISSUE:

Reducing worker exposure by using the Occupational Risk Management Toolbox	1
Occupational Risk Management Toolbox - Global Implementation Strategy	3
COSHH essentials - easy steps to control chemicals	5
Globally Harmonized System	7
Report from the 2 nd International Control Banding Workshop	7
The practical application in developing countries	9
Websites for further information	10
Contributors' information	11
WHO Contacts	11
GOHNET Member Application Form	12

recognized that the control banding concept could revolutionize workplace health and safety worldwide. This concept could be applied to a range of hazards – physical, biological, and ergonomic.

Control Banding toolkits are user-friendly, simple matrices that provide the user with guidance for controlling exposures to hazards. If adequately trained, people who have little or no occupational hygiene experience, like a small employer, can 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 extensive, complex work done by experts behind the scenes who analyze the hazard, develop a predictive model for exposure, determine the best methods for exposure control and develop guidance documents. Experts rely heavily on good quality data to state with some confidence that a specific technique will reduce the exposure by a predictable amount and, thus reduce a hazardous risk to an acceptable level.

Toolkits provide guidance for the more routine occupational hygiene problems. Since they do not use on-site experts to conduct exposure monitoring, the focus for risk management shifts from measurement to on-site exposure control. Yet, Toolkits do not replace the need for experts.

In fact, the method itself recommends that some situations be dealt with only by experts on the subject. Moreover, when experts are scarce, then this approach allows them to have more time to concentrate on the more complicated risk assessment and management processes.

Toolkits offer opportunities to overcome the scarcity of technical expertise in developing nations and help leverage resources in developed nations. Employers can save money on hazard assessment and, therefore, have more to spend on worker protection. The international occupational health and safety community anticipates that this easy-to-use system will result in higher levels of worker protection around the world and will reduce the number of occupational accidents and illnesses.

Development of the Toolbox

The process used to develop the Toolbox has been called *control banding* because hazards, risks and controls are grouped into bands. Experts form *risk bands* by combining *hazard bands* and *exposure bands* into a “level of concern.” They then group controls into bands, too, since risk can be reduced to acceptable levels by employing adequate, sometimes simple exposure control measures. Exposure control guidance is provided after the analysis is completed.

Risk Bands

Hazard Band: Hazards are grouped according to their classifications and common hazardous properties. In the case of chemical hazards, toxicologists and other experts make the classifications based on scientific studies.

Exposure Band:

Exposures are grouped based on the task being performed, the duration of the exposure and, in the case of chemicals, the quantity in use, as well as their volatility and dustiness index.

Each risk band is associated with a particular level of control, a control band, to reduce the exposure to a level at which the experts judge the risk of harm to be acceptable or negligible.

Control Bands

Control techniques are ranked in order of stringency. They range from simple workplace good practice, to more stringent controls, for example, when addressing chemicals the controls could range from simple hand-washing to more stringent exhaust ventilation.

Control Guidance

The process leads the user to a recommendation for controls or a control guidance document. This guidance is developed by experts to be comprehensible, acceptable to and usable by the tool's main target group, such as the SME's or developing countries.

Toolkits are best when they are interactive, allowing the user to enter specific worksite information to obtain exposure control guidance for the specific problem. For example, when using the Chemical Toolkit, the user finds the correct chemical hazard group by looking at the label or the Safety Data Sheet from the chemical supplier. The user then determines how the chemical will be used and in what quantity. This leads to the tool's guidelines or exposure control recommendations.

Thus, given basic information on the hazard and what the task entails, an employer can get the guidance that experts predict will be right for those circumstances.

Why are chemicals the first ones to be addressed?

The use of chemicals in manufacturing, the service industry, cleaning, agriculture and other industries, is increasing in both developed and developing nations worldwide. Although these chemicals enhance our lives, they also have the potential for causing serious harm, especially to people whose jobs require them to work with the chemicals on a daily basis.

Workers deserve protection from the harmful effects of the chemicals with which they work. Yet, thousands of chemicals remain unregulated without specific occupational exposure limits. Only about 1000 of the chemicals in use today have Occupational Exposure Limits (OELs)¹. The process of setting OELs is resource-intensive. It is infeasible to do all the studies necessary to derive and assign accurate OELs, and it is impossible to regulate all of the chemicals in use today. Even when regulated, enforcement often lags behind.

SMEs often lack financial and technical resources to assess and ensure appropriate protection for their workers. Economies in transition and developing nations also lack adequate access to appropriately experienced people to provide assessment and control of occupational hazards. An alternative, user-friendly system to protect workers from adverse health effects of hazardous chemicals was needed.

The Chemical Toolkit was developed by a team of occupational hygienists assembled by IOHA with representatives from Great Britain, USA, Southern Africa and Asia. It was modelled after the COSHH Essentials, the Chemical Toolkit developed by the Health and Safety Executive (HSE) in the United Kingdom. Additional articles in this issue of GOHNET discuss the COSHH Essentials and the Chemical Toolkit.

Advantages

The Toolbox is:

- complementary to traditional hazard control systems
- simple and easy to use
- cost-effective
- beneficial for SMEs
- beneficial for emerging economies and developing nations
- applicable in most settings
- applicable to chemicals that do not have OELs, as well as those that do
- a tool to free-up professionals/experts for more complicated work
- a tool implemented by the employer
- a tool with the potential to be applied to non-chemical settings.

Limitations

Although control banding has a plethora of advantages, the system as currently designed has some limitations. Some of the questions and suggested limitations found in the literature are:

- Accuracy of the Core Model
- Accuracy of the MSDS information from the chemical manufacturer
- Accuracy of hazard classifications performed by suppliers and placed on labels.
- R-phrases are not universal
- The “human factor” — employers and workers using self-assessment tools; will they apply the tool conscientiously?
- Performance of engineering controls
- Accuracy of amounts of chemicals used
- Use is limited to common, typical chemical usage, not complex unusual circumstances
- Does not apply to spills, accidental loss of containment or breakdown of normally reliable control measures
- Currently limited to a subset of chemical exposure scenarios, that is work is underway on control banding for skin exposure.

Next steps for the Chemical Toolkit

Under the auspices of the IPCS, an International Technical Group (ITG) has been established to further develop and implement the Chemical Toolkit through the Occupational Risk Management Toolbox. Partners in this international effort include:

¹ Oldershaw, P.J. 2001. Control banding - a practical approach to judging control methods for chemicals. *Journal of Preventive Medicine*, 9(4): 52-58.

- ILO
 - WHO
 - IOHA, including its member organizations, such as the American industrial Hygiene association (AIHA) the American Conference of Governmental Industrial Hygienists and the British Occupational Hygiene Society (BOHS)
 - UK HSE
 - US National Institute of Occupational Safety and Health (NIOSH)
 - Germany's Gesellschaft für Technische Zusammenarbeit (GTZ)
- A Global Implementation Strategy developed by the ITG provides key high-level approaches to the development of the Toolbox. Implementation of the Chemical Toolkit is a particular focus of the Strategy. Key strategy elements include:
- Development of new control guidance sheets based on country experience, to meet the needs of developing countries in particular. This includes piloting, peer review of guidance, evaluation and revision. Other technical improvements will also be made. Gerry Eijkemans describes this in her article included in this issue.
 - Translation into local languages and development of training plans.
 - Establishment of new partnerships and influencing national decision-makers.
 - Development of detailed work plans by stakeholders to effect local implementation.
 - Development of a research agenda. Carolyn Vickers describes the ITG Strategy in more detail in her article for this issue of GOHNET.

Future Challenges

The Toolbox is a promising new strategy for controlling occupational hazards, yet implementation challenges exist. No matter how impressive the information, it is only valuable when it can be practically implemented at the local level. Therefore, systems must be established at every level, international, national and the local enterprise level. With each level come its particular challenges.

Internationally

- Developing additional toolkits for workplace problems such as ergonomics and general safety: These toolkits must include practical guidance for use by SMEs in both developing and developed nations.
- Informing and coaching advocates — occupational hygiene specialists or persons responsible for workplace health and safety programs in each nation: Developing a strong network of champions in every nation, people who understand the toolkits and how to use them is important to promote and expand the usage of the toolkits.
- Communicating and effectively publicizing the program
- Enlisting the support of developed nations to assist developing nations in implementation and use of toolkits.
- Time for implementation of the Chemical Toolkit: Since most nations do not use the EU R-phrases and global implementation of the GHS is planned to take place in 2008, the tool will need to be implemented over time.

Nationally

- Developing an infrastructure to promote, train and sustain the use of the Toolbox.
- Ensuring accuracy of the information on the Safety Data Sheets. The Chemical Toolkit depends on the R-phrase or hazard statements listed on the label and/or Safety Data Sheets. If the information is not correctly stated, then all that follows may be inaccurate.
- Devising a plan to bring the Chemical and future toolkits to the employers, especially SMEs for practical implementation.
- Training employers and employees concerning the important reasons for which to use the toolkits, as well as how to use them.
- Encouraging employers to use the recommended and most appropriate level of control recommended.
- Incorporating the toolbox concepts into national occupational health and safety policy and regulations

Local enterprise level

- Learning to use the toolkits in the Toolbox appropriately and

ensuring employees understand their use.

- Implementing the recommended exposure controls appropriately.
- Properly maintaining engineering controls, ventilation systems or other mechanical systems recommended and installed so they can provide on-going effective exposure control. It is not enough to just install the recommended equipment. The equipment must also be checked regularly, be maintained and repaired as necessary to ensure it is performing effectively.

In addition, research must be conducted at all levels to validate the efficacy of the various toolkits. Topics could include: efficacy/appropriateness of the employer's/worker's use of the toolkit, the accuracy of the R-phrases and the GHS hazard statements on labels, efficacy of ventilation/engineering controls and training needs.

Conclusion

The Occupational Risk Management Toolbox is envisioned to organize workplace solutions into toolkits that use the control banding concept. These toolkits can help address workplace hazards by focusing on on-site exposure control and minimizing the need for expensive exposure monitoring. To achieve this, people must know about the Toolbox, understand how to use it and then implement the recommended guidance correctly.

We invite you to become a part of this exciting new venture through:

- developing new toolkits for the Toolbox,
- advocating for the implementation of the Chemical Toolkit in your country,
- conducting research,
- training local small business owners, large employers, union members and line employees in how to use the current Chemical Toolkit, and through
- using the Chemical Toolkit in your workplace.

Occupational Risk Management Toolbox Global Implementation Strategy

*Agreed by the IPCS International Technical Group on 28 May 2004
Carolyn Vickers (vickersc@who.int), WHO, IPCS*

Introduction

This Global Implementation Strategy aims to build and implement an Occupational Risk Management Toolbox (Toolbox), containing toolkits to manage different workplace hazards. The first such toolkit, the International Chemical Control Toolkit (Chemical Toolkit), is based on an approach to risk assessment and management called "control banding". This approach groups workplace risks into "control bands" based on combinations of hazard and exposure information. It can also be applied to non-chemical workplace hazards. As this banding technique is semi-quantitative or qualitative depending on the application, it is particularly relevant for use in small and medium-sized enterprises, developing nations, and, in the case of chemicals, where no occupational exposure standard has been set. It may also be useful for environmental risk assessment and management, as health and environment controls are complementary, and often inseparable, at the workplace level.

Aim of the Global Implementation Strategy and Implementation Partners

Under the auspices of the International Programme on Chemical Safety (IPCS), an International Technical Group (ITG) has been established to facilitate the further development and implementation of the Toolbox. This Global Implementation Strategy provides key high-level approaches to achieve this aim. It is intended that work plans, focusing on particular applications, countries or regions, would be developed and implemented by relevant stakeholders. A particular focus of this Strategy is implementation of the Chemical Toolkit.

Partners in this international effort include: IPCS (International Labour Organization and World Health Organization); International Occupational Hygiene Association (IOHA); The Health and Safety Executive (HSE) in Great Britain; US National Institute for Occupational Safety and Health (NIOSH); and the German Gesellschaft für Technische Zusammenarbeit (GTZ). As this Strategy is implemented, new

partnerships will be encouraged. The ITG Terms of Reference and Membership List are provided in Annex 1, which will be updated as needed.

Stakeholders

Stakeholders include implementers (including employers), researchers and workers/users of chemicals. Bodies that may be involved in the implementation of this Strategy include: intergovernmental and international non-governmental organizations (such as IOHA); government agencies; industry, including associations of chemical producers and suppliers; employer and employee associations; industrial hygienists; labour unions; labour inspectors; researchers; and training professionals.

The International Chemical Control Toolkit

The Chemical Toolkit (adapted from the HSE's COSHH Essentials) is available on the internet through the ILO SafeWork Website. It is undergoing further development, which will include technical improvement and additions. This process will also include translation and piloting in selected countries. The hazard information employed by the Toolkit is either the European Union (EU) label Risk (R) phrases, or the hazard statements of the Globally Harmonized System for Classification and Labelling (GHS). The target for global implementation of the GHS is 2008, individual country implementation dates could vary. Hence implementation of the Chemical Toolkit will need to be phased, initially focusing on building the necessary skills, knowledge and mechanisms for implementation, development and testing of guidance sheets, translation into other languages, and application of more generic approaches, such as the GTZ Chemical Management Guide (which is based on a simplified control banding technique). Implementation of the full Chemical Toolkit will be dependent on that country's use of EU risk phrases and/or GHS hazard statements.

Key Elements of the Implementation Strategy

Key elements are listed below, with lead bodies in parenthesis where relevant. At the work plan level, detailed actions taken must take into account the different needs of developing countries, economies in transition and developed countries. However harmonized approaches should be used where possible to avoid unnecessary duplication of effort.

1. *Further develop the Chemical Toolkit, including:*
 - Development of new control guidance sheets based on experience, to meet the needs of developing countries in particular (ILO with the input of others including GTZ; IOHA). This includes piloting, testing, evaluation and revision. The need for country-specific sheets will be explored. However, unnecessary differences in the technical materials should be avoided. Some guidance sheets should be trade and/or task specific.
 - As guidance sheets begin to be developed by implementers (e.g. country-specific sheets), a mechanism for peer review, including peer review criteria will be developed and the guidance sheets shared through an international Clearing House (see below) (ILO, WHO).
 - Development of sheets for workplace processes that generate chemical exposures (ILO, IOHA).
 - Addition of the skin route of exposure (the Chemical Toolkit currently focuses on inhalation exposure) (ILO with the input of HSE).
 - Translation in local languages (WHO Collaborating Centres (WHO CC); ILO; others).
2. *Enhance links between the GHS, the Chemical Toolkit and other workplace tools.*
 - Include GHS phrases in the IPCS International Chemical Safety Cards (WHO-PCS, ILO).
3. *Build and promote the Occupational Risk Management Toolbox, through:*
 - Development of toolkits for workplace hazards other than chemicals (lead group ILO, WHO, IOHA, NIOSH, linking to an expanded network of other international and national bodies).
 - Integration of other toolkits in WHO Collaborating Centres' work plan (WHO CC Task Force on Preventive Technology).
 - Adaptation of existing participatory processes that have effectively engaged local communities (e.g. WISE, WIND programme) (ILO).

4. *Explore new partnerships for implementation, including:*
 - International bodies involved in implementation of the GHS, for example to tap into GHS implementation and training workshops (ILO).
 - The International Association of Labour Inspectors (IALI) (ILO to lead).
 - Identify potential donors and granting bodies.
 - Use country to country partnerships ("twinning"), for example between a developed and developing country.
5. *Foster the development of work plans in support of this Strategy, focusing on specific applications, industry/occupation situations, countries or regions and maintain links with national and other working groups established to implement work plans. Work plans will aim to influence local decision-makers and effect local implementation. Information on work plans will be included in the Clearing House (see below).*
6. *Identify ways to influence national decision-makers, including through:*
 - WHO CC network activities (WHO-OEH).
 - ILO-CIS Network.
 - ILO and WHO offices.
 - The European Union.
 - Agenda of inter-governmental meetings, e.g. on EU-US Cooperation.
 - Promotion at international and national Occupational Safety and Health/Industrial Hygiene Conferences.
 - Holding annual or bi-annual international Control Banding workshops (1st workshop held November 2002, 2nd workshop held March 2004).
 - Explore combined approach for 3rd workshop in September 2005 through linking IOHA 6th International Scientific Conference (South Africa) and XVIIth World Congress on Safety and Health (Orlando). IOHA meeting will be back to back with WHO CC meeting. Train-the-trainers workshop for Africa also planned.
 - WHO CC Network meeting (Milan, June 2006) back to back with ICOH meeting provides an option for control banding planning meeting and training.
7. *Develop and publish a research agenda* (lead: University of Oklahoma, working with other leading agencies, for the ITG), including sector-specific research (construction, agriculture, mining). This would include the areas listed below and would be updated regularly based on technical progress. A current research agenda will be maintained on the website (refer below), and at Annex 2. Research agenda will need to include: application of the control banding technique to different hazards, e.g. chemical, biological, physical, ergonomic exposures, etc.; different industry situations, e.g. SMEs, large industries, multi-nationals; developing countries; and developed countries.
8. *Collect and communicate research and information, including:*
 - Maintenance of the website, hosted by ILO, with links to other relevant websites (lead: ILO).
 - Augment the website with a Clearing House including a web-based directory of research and validation studies (researchers list their ongoing studies and references for completed work).
 - Include other activities in the Clearing House, such as work plans developed by countries, etc.
 - Include a repository of guidance sheets in the Clearing House. Centres could be identified (regional, language-based) to maintain these (e.g. NIOSH), linked to the ILO web-site.
 - Publish regular update/topical articles in newsletters by email/net. Use existing vehicles and meetings to distribute (IOHA, NIOSH, Global Occupational Health Network Newsletter, etc).
9. *Develop and maintain a capacity building and training plan, focussing on developing countries (WHO-OEH). This will be needed for piloting work, then during the full-scale implementation. It would include:*
 - Explore use of the GTZ Chemical Management Guide to build capacities and prepare countries for implementation of the Chemical Toolkit.

- Cultivate regional train-the-trainer core groups.
 - Conduct train-the-trainer workshops in conjunction with other international/regional events.
 - Provide generic training materials that can be translated for local use.
10. *Maintain an International Technical Group to oversee the Global Implementation Strategy* (quarterly telephone conferences, with face-to-face meetings occurring back-to-back with other events where possible) (WHO-PCS).

IPCS International Technical Group (ITG).

Terms of Reference

1. The functions of the ITG are:
 - 1.1 To facilitate the further development and implementation of an Occupational Risk Management Toolbox, in particular the International Chemical Control Toolkit.
 - 1.2 To maintain a Global Implementation Strategy, including identifying lead bodies for key actions.
 - 1.3 To provide guidance to the relevant lead body/bodies concerning the collection and dissemination of information on activities.
 - 1.4 To coordinate other activities undertaken in support of the Global Implementation Strategy, in particular, those of its members.
 - 1.5 To measure and communicate progress against the Strategy.
2. The ITG makes its recommendations and decisions by consensus of those members present at a meeting.
3. The roles of Chair and Rapporteur alternate between the IPCS partners, i.e. ILO and WHO.
4. The ITG normally meets quarterly by teleconference. The ITG may agree to hold face-to-face meetings from time to time, and in this circumstance, participants make their own arrangements for bearing the cost of attendance.

Membership

The members of the ITG are experts from the following organizations:

American Industrial Hygiene Association (AIHA)
 GTZ Convention Project on Chemical Safety, Germany
 International Labour Organization (ILO)
 International Occupational Hygiene Association (IOHA)
 Health and Safety Executive (HSE), Great Britain
 National Institute for Occupational Safety and Health (NIOSH), US

World Health Organization (Occupational and Environmental Health (OEH) and Programme for the Promotion of Chemical Safety (PCS))

International Research Agenda

An international research agenda will be developed and published (see Strategy Element 7). Proposals that have come forward to date are listed below.

1. *Chemical Toolkit Applications in Developing Countries*
 - Investigate applications within large enterprises .
 - Develop tools for SMEs.
 - Effectiveness of predicting exposures.
 - Validation of controlling exposures.
 - Field test of current product.
 - Translation of concepts and common phrases.
2. *Other Applications in Developing Countries*
 - Focus on large scale industries, select appropriate industries and hazards.
 - Develop other toolkits for the Occupational Risk Management Toolbox.
 - Adapt existing approaches (WIND Program), build on successes.
 - Develop an ergonomics toolkit based on existing models.
3. *Chemical Control Toolkit Applications in Developed Countries*
 - Further validation studies.
 - Validate controlling exposures in selected small business trades.
 - Field industrial hygiene input on expanding, ranking hazards, prioritizing controls.

- Focus on small business trades and define success.
4. *Other Applications in Developed Countries*
 - Develop Ergonomics Toolkit based on existing national models.
 - Expand industrial hygiene aspects to include physical and biological exposures.
 - Investigate Occupational Risk Management Toolbox concept for SMEs.
 5. *Research to Fill Gaps in the Chemical Toolkit*
 - Investigate applications to the skin route of exposure.
 - Integration of skin and inhalation routes of exposure.
 - Integration of useful elements from comparable tools, e.g. the German Column Model.

COSHH essentials – easy steps to control chemicals

*Paul Evans (paul.evans@hse.gsi.gov.uk) and
 Andrew Garrod, Health & Safety Executive, UK*

'COSHH essentials' is guidance on the British 'Control of Substances Hazardous to Health' regulations, an application of 'control banding'. The Advisory Committee on Toxic Substances (ACTS) set up a Working Group of industry, trade union, government and independent experts in the mid 1990s to develop such guidance. There were several pieces of evidence showing the way forward. This evidence included emerging patterns between occupational exposure limits (OELs) and chemical hazard classifications; practice in the pharmaceuticals industry to specify designs to control exposure in unit operations when using intermediates with uncertain toxicity; and the finding in Britain that few small or medium sized enterprises (SMEs) used expensively-derived OELs anyway.

But hazardous chemicals and substances need to be properly controlled. The consequences of failure include the burden of preventable ill health, a waste of business resources (time, products), compensation claims and possible legal action under the criminal law (COSHH).

COSHH applies to all hazardous substances: chemicals, products, natural substances, fumes, dusts, gases and germs, for example. But the assessment routines in COSHH essentials deal only with some hazardous liquids and solids. Hazardous chemicals and products that are 'placed on the market' for use at work fall under the Chemicals (Hazard Information and Packaging for Supply) regulations (CHIP). Such substances need a warning label and a safety data sheet, so COSHH essentials can be used. It is important to note that some chemicals (such as cosmetics, pesticides, medicines) fall under different classification schemes. And fumes and dusts generated in the workplace do not have a label!

There are two main factors affecting the risk to health by breathing in chemical dusts or vapours. These factors are the type of damage that the chemical could cause, and the dose that the worker is liable to breathe in. There are other risks to health from chemicals, for example by skin contact, but we will stick to discussing inhalation for the time being.

'COSHH essentials' is a 'control banding' scheme with two main elements. The first is the harmfulness of a chemical or product, based on its classification under CHIP – the hazard band. The second is the likelihood of the chemical or product getting into the air, and being available for inhalation – the exposure band. The committee of experts mentioned above devised a matrix or 'score card' to combine the hazard and exposure to produce a control band.

There are four main control bands in COSHH essentials. These are:

- General ventilation - A 'good standard' of ventilation with good working practices.
- Engineering control - Local exhaust ventilation. This ranges from a single point extraction close to the dust or vapour, to extracted partial enclosures such as booths. It includes other engineering control methods such as vapour cooling coils, refuges and water suppression.
- Containment - The substance is largely confined or enclosed. Small breaches may be acceptable, such as for sampling.
- Special - Expert advice is required to select the right control measures.

When COSHH essentials were extended to cover named process-related

emissions, a fifth control band was introduced:

- Respiratory protective equipment (RPE) - Used in addition to other controls such as permits to work and extraction, to protect the worker in specified situations.

The two contributing elements, the hazard band and the exposure band, are derived in COSHH essentials as follows:

The hazard band – the potential for harm - is derived from the CHIP classification. This classification places the substance into one of five bands, A to E, according to its Risk phrases. Each band is associated with a concentration range.

Table 1 : Risk phrase numbers, concentration ranges and hazard groups

Risk phrases	Airborne concentration range (target)	Hazard band
R36, R38, R65, R67, all R phrases not otherwise listed and substances not hazardous for supply	Dust: >1 to 10 mg/m ³ Vapour: >50 to 500 ppm	A Irritant
R20, R21, R22	Dust: >0.1 to 1 mg/m ³ Vapour: >5 to 50 ppm	B Harmful
R23, R24, R25, R34, R35, R37, R41, R43, R48/20/21/22	Dust: >0.01 to 0.1 mg/m ³ Vapour: >0.5 to 5 ppm	CToxic / corrosive
R26, R27, R28, R40, Carc cat 3, R60, R61, R62, R63, R64, R48/23/24/25	Dust: <0.01 mg/m ³ Vapour: <0.5 ppm	D Very toxic
R68 Muta cat 3 (formerly R40 Muta cat 3), R42, R45, R46, R49	Seek specialist advice	E Irreversible
R21, R24, R27, R34, R35, R36, R38, R41, R43, R48/21, R48/24, R66 and OEL with Sk notation	Skin exposure	S skin / eye

Note:

If the substance is labelled R68 combined with R20, 21 or 22, use Band B

If the substance is labelled R39 combined with R23, 24 or 25, use Band C

If the substance is labelled R39 combined with R26, 27 or 28, use Band D.

The exposure band– the potential for inhaling dust or vapour arises by combining the substance's physical properties and the amount used. For solids, 'dustiness' is the key physical property and the user describes this subjectively. For liquids, 'volatility' is the key and the user needs the process temperature and either the boiling point, or the vapour pressure at a stated temperature (from the Safety Data Sheet).

Table 2 Exposure potential – amount and physical properties

Amount	Solids	Liquids
Small	Grams	Millilitres
Medium	Kilograms	Litres
Large	Tonnes	Cubic metres
Physical property	Dustiness	Volatility-vapour pressure *
Low	Pellets	<500 Pa
Medium	Crystals or granules	500 – 25,000 Pa
High	Powders	>25,000 Pa

A chart relating process temperature to boiling point also allocates low, medium or high volatility. For activities at room temperature, low volatility means a boiling point above 150°C, medium volatility a boiling point between 50°C and 150°C, and high volatility a boiling point at or below 50°C.

Where heating or cooling is applied, for a Process Temperature PT the volatility band is determined as follows:

If boiling point ≤ 2 x PT + 10, then volatility = high.

If boiling point between 2 x PT + 10 and 5 x PT + 50, then volatility = medium.

If boiling point ≥ 5 x PT + 50, then volatility = low.

In the Internet version, there is a lower temperature cut-off for boiling point at 20°C, and a cut-off for vapour pressure at 1 atmosphere. Such substances will be in the vapour phase at room temperature (a gas), and COSHH Essentials does not currently cover gases.

Table 3 Index to task control guidance sheets for engineering control

Unit/Operations	Sheet title	Solids			Liquids		
		Small	Medium	Large	Small	Medium	Large
General tasks	Local exhaust ventilation	200	200	200	200	200	200
	Fume cupboard	201			201		
	Laminar flow booth		202			202	
	Ventilated workbench	203			203		
Storage	General storage	101	101	101	101	101	101
Dust extraction	Removing waste from dust extraction unit	204	204	204			
Transfer	Conveyor transfer		205	205			
	Sack filling		206	207			
	Sack emptying		208				
	Filling kegs		209				
	Charging reactors / mixers from a sack or keg	210	210				
	IBC filling and emptying			211			
	Drum filling					212	
	Drum emptying (drum pump)					213	
Weighing	Weighing	201	214		201		
Mixing	Mixing	201	215	216	201	217	217
Sieving	Sieving (+ filtering)	218	218				
Screening	Screening			219			
Surface coating	Spray painting				220	221	
	Powder coating		222	222			
Lamination	Batch lamination					223	223
	Continuous lamination					224	224
Dipping	Pickling bath					225	226
	Vapour degreasing bath					227	227
Drying	Tray drying oven		228			228	
	Continuous drying labyrinth oven					229	229
Pelletising	Pelletising		230	230			
	Tablet press		231				

There was a reference above to control of exposure via skin, and to selection of personal protective equipment. The 'risk phrases' that produce sheets S100 and S101 are shown in Table 1 (see Skin exposure). However, this element requires improvement and this is planned for revision in the near future.

Since 2002, COSHH essentials have been available through a free website. The rule-based expert system guides the user through a series of pages (typically 12 from the start) to reach an assessment record and control guidance sheets specific to the process. Since 2003, this site includes guidance sheets for process-related fume, dust and certain asthmagens.

Globally Harmonized System

Carolyn Vickers (vickersc@who.int), WHO, IPCS

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) provides a set of harmonized hazard criteria for chemicals. These are used on labels and in Safety Data Sheets to communicate hazards. Since the International Chemical Control Toolkit utilizes the GHS hazard statements to identify the “hazard band” as the first step in using the Toolkit in the workplace, the Toolkit enables the label statements to be translated into practical control measures.

The decision to create the GHS was taken through [Chapter 19 of Agenda 21](#), adopted at the [United Nations Conference on Environment and Development](#) (UNCED, 1992). After intensive technical work to agree on harmonized criteria, the GHS was adopted in 2002. This technical work was coordinated and managed under the auspices of the [Interorganization Programme for the Sound Management of Chemicals](#) (IOMC) Coordinating Group for the Harmonization of Chemical Classification Systems (CG/HCCS). The technical focal points for completing the work were: the [International Labour Organization](#) (ILO) for the hazard communication; the [Organization for Economic Cooperation and Development](#) (OECD) for the classification of health and environmental hazards; and the [United Nations Sub-Committee of Experts on the Transport of Dangerous Goods](#) (UNSCETDG) and the ILO for the physical hazards. The harmonized criteria developed enable chemicals to be (a) classified according to their hazard, and (b) labelled using standard hazard statements and pictograms.

This GHS system is now available for worldwide use. In its Plan of Implementation adopted in Johannesburg on 4 September 2002, the World Summit on Sustainable Development (WSSD) encouraged countries to implement the new GHS as soon as possible with a view to having the system fully operational by 2008. The GHS is now maintained by the GHS Sub-Committee under the United Nations Economic and Social Council, a Globally Harmonized System of Classification and Labelling of Chemicals (GHS Sub-Committee).

Implementation of the GHS has already started with pilot countries introducing the system in their national practices in different regions of the world. Widespread introduction of the GHS and effective hazard communication into national legal and technical infrastructures is only likely to occur if adequate support for training and technical assistance is made available. To this aim, the [UNITAR/ILO/IOMC GHS Capacity Building Programme](#) is developing partnership activities and providing support to assist countries in developing and implementing the GHS. This work provides an opportunity for cooperation on the global implementation of the International Chemical Control Toolkit.

More information on the GHS can be found at the following website. www.unece.org/trans/danger/publi/ghs/ghs.html

Report from the 2nd International Control Banding Workshop

1 – 2 March 2004, Cincinnati, Ohio, U.S.

Deborah Nelson (imel@ou.edu) and David M. Zalk (zalk1@lnl.gov)

By any measure, the 2nd International Control Banding Workshop (2ICBW): *Validation & Effectiveness of Control Banding*, was an outstanding success. The workshop was organized by eight partners:

- American Conference of Governmental Industrial Hygienists (ACGIH®)
- American Industrial Hygiene Association (AIHA)
- International Labour Organization (ILO)
- International Occupational Health Association (IOHA)
- U.S. National Institute for Occupational Safety and Health (NIOSH)
- U.S. National Safety Council (NSC)
- U.S. Occupational Safety and Health Administration (OSHA)
- World Health Organization (WHO)

Dr John Howard, the Director of NIOSH, opened the workshop on the first day, and Mr John Henshaw, Assistant Secretary of Labor - OSHA led off on the second day. Twenty-two speakers from Europe, the U.S., Asia, and South America shared their research and experiences on topics ranging from the birth of control banding concepts in the pharmaceutical

industry, to adaptation of the concept to meet national needs in several developed and developing countries, to qualitative and quantitative validation studies, to new and innovative applications of control banding in fields such as ergonomics. Throughout the 1 1/2 days of platform sessions, an outstanding poster session was integrated into the Workshop's main room to afford open and active discussions between authors and attendees. Poster topics covered a broad range of Control Banding (CB) topics including: validation and effectiveness applications, collaborative efforts, new international approaches, expansion of range, and case studies. Following the platform and poster sessions, the 165 participants, who represented 13 countries, participated in five interactive breakout sessions:

- Scientific Session I: The Research Agenda for Developing Nations
- Scientific Session II: The Research Agenda for Developed Nations
- Expansion of Range of CB
- Performance-based Exposure Control Guides
- Open Topics

An additional opportunity was available for participants on March 3 and 4, as Mr Paul Evans and Mr Andrew Garrod, both from the United Kingdom's Health and Safety Executive, provided one-half day of interactive training on the Control of Substances Hazardous to Health, which includes control banding concepts. Many of the speakers and organizers of the workshop attended a one-day workshop presented by Ms Joyce Miller. Her course, “Engaging Industrialists in Chemical Management: A Training Concept for Developing Countries,” explains the GTZ – Convention Project Chemical Safety concepts which have been field-tested in Indonesia. The chemical management concept is an important addition to the Occupational Risk Management Toolbox, as the CB approach may not be applicable in all national settings.

Breakout sessions report

After delving into historical, ongoing, and future CB subjects in the 1 1/2 days of platform sessions and concurrent poster sessions, Workshop participants were afforded a unique opportunity to participate in the Breakout Sessions of their choice. Attendees discussed and prepared questions and raised new issues surrounding CB. Each session had a facilitator and rapporteur so that the essence of the discussions could be captured to assist in shaping the future direction of CB efforts.

It is an accepted axiom that CB strategies may be of the greatest utility in developing countries, where limited resources and a lack of established mechanisms or organizational infrastructure limit the implementation of occupational safety and health (OSH) controls. Although the initial intent for implementing CB concepts was providing OSH guidance for controlling workplace hazards for small- and medium-sized enterprises (SMEs) in developed countries, it is now realized that the same guidance may be best suited for the largest industries within developing countries. Other approaches, such as the GTZ concepts, may be more useful for SMEs in developing countries.

Presentations and discussions of CB topics covered the multiple tools and CB strategies for consideration. Many challenges exist for the implementation of CB strategies with comprehensive exposure reduction protocol being somewhat limited within the chemical agent realm and non-existent for the physical and biological exposure indices.

Breakout Sessions recorded participant viewpoints to digest and crystallize the greatest challenges currently facing CB. Prioritization of the issues included considering cost-effectiveness and efficiency to expand the reach of CB concepts while minding the largely volunteer effort bringing this forward. For example, comparing the relative priority of applications in the evolved and well-funded pharmaceutical industry, to that of approximately 90% of the world's workforce in developing countries with no foreseeable budget for preventive approaches and OSH resources, is difficult.

A summary of the outcomes from the Breakout Sessions is as follows:

- 1.0 Developing Countries
 - 1.1 Research Topics
 - 1.1.1 Within Chemical Control Toolkit Scope:
 - Investigate applications within large industries.
 - Determine effectiveness of exposure prediction.
 - Study validation of controlling exposures.
 - Field test of current product.
 - 1.1.2 Outside Chemical Control Toolkit Scope:
 - Focus on large scale industries, select appropriate industries.

- Expand to ORM Toolbox concept.
 - Adapt existing approaches, build on successes.
 - Develop Ergonomics Toolkit based on existing models.
- 1.2 Non-Research Topics
- 1.2.1 Within Chemical Control Toolkit Scope:
- Cultivate regional train-the-trainer centers.
 - Coordinate ORM Toolbox concepts.
 - Develop Preventive Technologies; WHO CC Work Plan 2006-10.
 - Implement International Technical Group's Implementation Plan.
- 1.2.2 Outside Chemical Control Toolkit Scope:
- Cultivate multinational cooperation with private enterprise.
 - Coordinate ORM Toolbox with IEA, IOHA, ISC, WHO CC.
 - Develop Preventive Technologies; WHO CC Work Plan 2006-10.
 - Coordinate with Occupational Health for All; ICOH, IOHA, IEA, WHOCC.
- 2.0 Developed Countries
- 2.1 Research Topics
- 2.1.1 Within Chemical Control Toolkit Scope:
- Develop CB Validation Working Group; focus on selected sectors/industries.
 - Seek field IH input for validation, expansion of scope, ranking of hazards, prioritization of controls.
 - Focus on small business trades and define success.
 - Expand to include other validated tools presented at 2ICBW.
- 2.1.2 Outside Chemical Control Toolkit Scope:
- Expand "Chemical Control" to include exposures not within scope.
 - Develop Ergonomics Toolkit based on existing national models.
 - Expand IH aspects to include physical and biological exposures.
 - Investigate ES&H Toolbox concept for SMEs.
- 2.2 Non-Research Topics
- 2.2.1 Within Chemical Control Toolkit Scope:
- Expand the scope of effectiveness in SMEs.
 - Encourage NIOSH, OSHA, and UK HSE cooperation focusing on small scale trades and specific tasks consistently performed within these trades.
 - Seek and provide user-end input, with a focus on the workforce, for when to use, prioritize, and implement.
 - Develop measurement tools for validating effectiveness over time.
- 2.2.2 Outside Chemical Control Toolkit Scope:
- Are injury and/or illness statistics an appropriate measure of success?
 - Interweave Participatory Occupational Research into ORM Toolbox.
 - Organize and educate national ES&H and Labor organizations.
 - Create National CB Workshop Organizing Committee.
- 3.0 Open Topics
- 3.1 Research Topics
- Explore twinning Developed Countries with Developing Countries for trial implementation, with a focus on communicating and sharing successes.
 - Coordinate prospective, retrospective, and epidemiological studies for validation.
 - Work with insurance and worker's compensation agencies for potential funding.
 - Involve stakeholders to define minimum performance standards, develop trainings.
- 3.2 Non-Research Topics
- Create CB Communications Group to disseminate new information and successes.
 - Consider changing the CB name, the 2ICBW consensus is to leave it for now.
 - Coordinate with large multinational companies to create regional training centers.
 - Strategize to overcome perceived SME's fear of working with government agencies.

Workshop Outcomes

International Implementation Strategy from the International Technical Group (ITG) on CB; The CB ITG, led by WHO International Programme on Chemical Safety (IPCS) and ILO, had the opportunity to meet before, during, and after 2ICBW to finalize input to an International Implementation Strategy for release after the event. A complete discussion of this extremely important document is incorporated within this volume of GOHNET in an article by Carolyn

Vickers, ITG Chair.

National Control Banding Workshop Organizing Committee; This Workshop, planned for March 2005 in Washington D.C., will develop a U.S. strategy to critically evaluate, and where appropriate, advocate the research, development, and application of complementary approaches to the traditional use of Occupational Exposure Limits. It is intended to include representatives inclusive of affected U.S. ES&H-related professional organizations. These approaches include CB and participatory OSH. Their common goal is to minimize occupational exposures to hazards including chemical, physical, biological, ergonomic, and organizational factors.

Ergonomics Toolkit Scientific Working Group; Initial work in developing an Ergonomics Toolkit currently includes Barbara Silverstein, Kate Stewart, Peter Johnson, and Dave Zalk. First stages of an Ergonomics Toolkit for Developing Countries is expected to be developed and trialed in English and Spanish for Costa Rica and Nicaragua, with planned expansion for Vietnam. This process is being coordinated with the International Ergonomics Association and the International Commission on Occupational Health with great interest for joint cooperation on a developed country version for North America.

Control Banding Practical Applications Workshop; 13 - 16 June, 2004 Utrecht, Netherlands; Coordinated as part of the the WHO Collaborating Centres Occupational Health Network (WHOCC) 2001 - 2005 Work Plan's Task Force 10 on Preventive Technologies. This event will seek to create and implement planned pilot projects in CB for South Africa, Benin, and India by developing and overseeing twinning strategies and training protocol with more established programs in developed countries. Attendees will include leadership and representatives from the ITG on CB and attendees from the Netherlands, Switzerland, India, Benin, South Africa, Brazil, Central America, Canada and the U.S.A.

Coordination of the 3rd International Control Banding Workshop (3ICBW); Planning is underway for joint, live video broadcast sessions between the XVIIth World Congress on Safety and Health at Work, to be held 18 - 22 September 2005 in Orlando, Florida, U.S., and the IOHA's 6th International Scientific Conference to be held 19 - 23 September 2005 in Pilanesberg National Park, South Africa. 3ICBW will be held on 21 September, 2005 over these two continents with a shared interactive podium during a three-hour period. Part of the outcomes of this 3rd Workshop are to become part of the initial draft of the WHOCC 2006 - 2010, to be created by the WHOCC Planning Committee at the IOHA 2005.

Control Banding Validation Working Group; IOHA will coordinate a validation process amongst its member organizations, to be implemented with assistance from national OSH research institutes like NIOSH and UK HSE. It had been anticipated that the 2ICBW would be a forum for researchers and practitioners to present their findings on validation and effectiveness of CB. Several researchers reported their findings. For example, M. Tischer found reasonably good agreement between predicted and actual levels for solid substances, but less agreement when organic solvents were used in milliliter quantities (1). Further, the level of control achieved depended more on organizational quality and human factors within a company than on specifically designed engineering controls. R. Jones and M. Nicas raised questions on the hazard classification scheme, especially for high potency chemicals, and exposure controls provided by local exhaust systems, leading to a recommendation that both need and efficacy of local exhaust systems be verified (2). The small number of presentations on this topic reinforced the perception that reliable, peer-reviewed data on validation and effectiveness are critical to widespread acceptance of CB, and that there is room for progress. Participants were urged to launch investigations and report their data.

Follow-up Activities

- A roundtable was presented on 11 May 2004 at the American Industrial Hygiene Conference and Exposition in Atlanta, featuring five speakers from the International Workshop: Paul Hewett, Keith Tait, Dave Zalk, Jennifer Silk, and Rick Niemeier.
- Informative and training sessions will be held at the Professional Conference on Industrial Hygiene, in Montreal, on 30 September to 4 October 2004.
- Numerous ongoing activities relating to the planning and execution

of the 3ICBW are currently underway. These activities will include an expanded introduction to CB sessions at the World Congress and Progress Meetings relating to the twinning strategies and pilot projects from the [CB Practical Applications Workshop](#).

References

1. Tischer M (2004). How reliable is the COSHH Essentials exposure predictive Model? Empirical data vs. model predictions.
2. Jones R, Nicas M (2004). Evaluation of the ILO Toolkit with regard to hazard classification and control approach effectiveness.

The practical application in developing countries; Outcomes of the planning meeting in Utrecht, The Netherlands, 13-16 June 2004

Gerry Eijkemans (eijkemansg@who.int), WHO, Occupational Health Team and Berenice Goelzer

There is scientific and technical knowledge available today that, if applied, could prevent and control most occupational risk factors. However, on a worldwide basis, “healthy” work environments are still the privilege of a few, as too many workers continue to be exposed to — often very serious — occupational hazards. The general environment continues to be polluted including through large scale disasters.

Even in developed countries, there is a “knowledge-application gap”. Prevention fails more often due to an inability to apply existing knowledge, adapted to specific conditions, than to an absence of knowledge. The application of the available knowledge on hazard prevention and control into appropriate and effective solutions at the workplace level must be further promoted. The wide dissemination of such solutions is also essential.

Observations in many countries, particularly developing countries, reveal that common constraints to the effective implementation of adequate control strategies include insufficient awareness, education and political will, shortage of adequate human and financial resources, deficiencies in information/access to information, and in communication among professionals and institutions, inadequate preventive approaches (including too much reliance on quantitative evaluations, not enough source control and too complicated control solutions), as well as failure to involve workers and their representatives directly in problem-solving processes.

For many years the World Health Organization has promoted the prevention and control of occupational risk factors. The “Global Strategy on Occupational Health for All” recommends a number of key principles for international and national occupational health policies, which include the following:

- avoidance of hazards (primary prevention)
- safe technology
- optimization of working conditions
- integration of production with health and safety activities.

When the Health and Safety Executive (HSE, United Kingdom) developed COSHH Essentials, both the ILO and WHO decided to promote this tool internationally. The underlying concept for the COSHH Essentials has been called “control banding.”

In the past, WHO has developed PACE (prevention and control exchange), and ILO has developed WISE (Work Improvement for Small Enterprises). The experiences learned from those initiatives were important for the implementation of the “control banding”.

The key objective of the promotion of the Chemical Toolkit is to support countries to focus their efforts on the control of hazards, instead of only focusing on the assessment of the hazards.

An International Technical Group (ITG) was established with representatives from WHO, IPCS, ILO, IOHA, HSE, NIOSH and GTZ in 2004, and prepared a structure for the project, aiming at individual work plans and including twinning of organizations for mutual support, exchange of information and experiences thus strengthening

the activities and avoiding duplication. One important aspect is capacity building and training.”

Under the Strategy, a meeting was organized in Utrecht in June 2004, by the Occupational Health Team of WHO (G. Eijkemans), together with the International Programme for Chemical Safety (IPCS) (C. Vickers).

The objective of the meeting was to launch effective action in selected countries, including the elaboration of models and strategies for implementation at the country level. Representatives of (upcoming) WHO Collaborating Centres in four countries participated; from their experience, it is expected that the project will be expanded to include many more countries.

International collaboration can appreciably strengthen national capabilities for the prevention and control of health hazards in the work environment, thus contributing to the protection of workers’ health and of the environment, worldwide. Sharing of knowledge and experiences will also contribute to avoid duplication of efforts and waste of valuable resources.

The specific objectives of this meeting were:

- To plan pilot projects for the implementation of the chemical safety toolkit and industrial hygiene in four countries (Benin, Brazil, India, South Africa)
- To develop effective twinning strategies with the implementing agencies in the four pilot countries
- To plan the training activities on the chemical safety toolkit in the four selected countries
- To develop a network of experts that will support the implementation of the project in the selected countries.

Participants were from Benin (Université d’Abomey Calavi, UnitÉ d’Enseignement et de Recherche en SantÉ au Travail et Environnement), Brazil (Fundacentro), India (National Institute of Occupational Health, Ahmedabad and Department of Environmental Health Engineering, Sri Ramachandra Medical College and Research institute, Chennai), South Africa (National Centre for Occupational Health, Industrial Health Research Group and Occupational & Environmental Health, Faculty of Health Sciences, University of Cape Town), Belgium (Université Catholique de Louvain), The Netherlands (TNO), Switzerland (Institut Universitaire Romand de SantÉ au Travail (IST, Lausanne), Service Cantonal de Toxicologie Industrielle et de Protection contre les Pollutions IntÉrieures, Geneva), the United Kingdom (HSE), and the United States of America (NIOSH). Participants worked together for three days to work towards the development of strategies for effective intervention. Representatives of WHO, IOHA and UNITAR were also present.

During the first day of the meeting the concepts of Control Banding, the International Chemical Toolkit, the GTZ Chemical Management Toolkit and other similar tools were presented and discussed. The next days were spent on the development of pilot projects in the four countries, taking into account their specific needs, capacities, legislation, culture and other relevant aspects.

The pilot projects that were developed included the following phases: plan, implement, evaluate and improve. The Pilot project also included awareness raising, training, and development/adaptation of practical and effective preventive solutions for specific jobs. It was discussed that this could be enhanced by a *Database of Control Solutions and Mechanisms* for continued exchange of experiences and information.

In each country, an “intermediary” was identified. This would be the organization or institution that receives the training (train-the-trainers) and will support the selected workplaces in the implementation of the project. These could be national institutes, local/national governments, universities, NGOs or other relevant stakeholders.

Main outcomes and conclusions of the meeting

There was a general consensus (coming from earlier discussions internationally) that the title of the methodology had to be changed for a number of reasons. The title “Control Banding” is adequate for the

method initially designed by the HSE and transformed into the "International Chemical Toolkit", for chemicals that are used, either in the liquid or powder form. However, the principle of acting (whenever appropriate) without, or before, carrying out quantitative evaluations opens wider possibilities that should not be overlooked and which do not exactly fit into the "banding" terminology. This is the case when specific guidance is given for specific risk factors, e.g., Silica. For example, the HSE has developed much control guidance to avoid exposure to airborne dust containing silica; this is called "Silica Essentials". It is possible and desirable to expand the concept to other hazards and also to specific operations. Moreover, the translation of the term "Control Banding" into other languages has posed some problems. For these reasons, a broader title to indicate the use of this concept has been sought and the decision was to name it "Occupational Risk Management Toolbox". To avoid initial misunderstandings, the term "Occupational Risk Management Toolbox" will be accompanied by "Control Banding", in brackets. The Toolbox will contain a set of Toolkits (for example: ergonomics, noise, working conditions) that will be developed over time.

Country projects

The participants divided into four sub-groups, one for each represented country, namely Benin, Brazil, India, and South Africa. The objective was to develop an action plan for each country, after "brainstorming" on the following basic questions:

- What is needed for control banding to be useful in developing countries? Which tool to use?
- What is needed to implement it?
- How to reach the established targets?
- How to achieve sustainability?

Four pilot projects were developed. Each country made effective use of the available resources, twinning institutions and experts. For the detailed pilot projects please refer to the WHO Website, where the full report of the meeting will be posted (www.who.int/oeh).

Benin focused the pilot effort on the agricultural sector (cotton). The GTZ Chemical toolkit was selected as the first choice instrument for this intervention, since there is guidance available on pesticides.

Brazil decided to focus the effort on small and medium enterprises (SMEs) that use chemicals, for example, furniture and shoe manufacturing and paint recycling.

India developed three pilot projects for medium to large enterprises in Western India, medium to large enterprises in Southern India, and a small enterprise test project (exploring the relations with ILO's International Programme on the Elimination of Child Labour).

South Africa decided to link the pilot project with the newly adopted (June 04) National Programme for the elimination of silicosis, focusing on quarries and foundries.

Initial draft proposals, which were prepared during the meeting, will be the basis for more detailed projects. These projects will fall into the scope of the WHO Task Force 10 (Preventive technology). A 400-word project summary on this should be completed by the end of July 2004, according to WHO requirements.

Supporting activities

It was considered by all participants that education and training are of fundamental importance, as well as other aspects of capacity building such as facilities, equipment and access to information.

It was also concluded that the impossibility of carrying out quantitative exposure assessment should never be a blockage to the implementation of obviously required control measures. Although exposure assessment is necessary in many cases, there are situations when much can be achieved without it. This does not mean that exposure assessment is not important.

A database containing control solutions for specific operations would be desirable. HSE, NIOSH and other institutions already have a sizeable collection of tested controls. An inventory of existing solutions should

be elaborated, as well as guidance for its application, which may require adaptation (as some measures may not be feasible in all situations). It is necessary to develop solutions which are adequate for SMEs. Solutions designed or adapted for use in developing countries should also be part of this database. It should be kept in mind how important it is to search for source control solutions, including substitution, modification, and work practices. It should also be pointed out that, particularly concerning inhalation hazards, personal protective equipment should be regarded as a last resort.

Teleconferences will be scheduled bi-annually and a discussion list, electronic forum and list serve have already been set up.

It was considered important to create an interactive, annually updated CD-ROM of the International Chemical Toolkit. For this purpose, an expert group should be set up, involving IOHA, WHO, IPCS, ILO and the HSE.

Conclusions and the way forward

The usefulness of the toolkit for developed countries has been effectively demonstrated in Europe, particularly in the UK. The use in developing countries will however be very different, with particular issues that have to be addressed, such as political will, scarce resources, language, just to mention a few.

The development of the pilot projects is a first step on the long way towards effective implementation of control strategies at a large scale in the South. They will permit to identify issues related to sustainability, bottlenecks, critical factors for success and the need for additional research and resources (materials, databases, translation, etc.).

The (political) commitment of all participants, and the quality of the pilot projects developed, indicate that there is a good possibility for success.

Support for those, and similar initiatives in other countries will be needed. If you are interested in collaborating in this promising new area, please contact Dr Gerry Eijkemans at the World Health Organization.

Websites for further information:

www.coshh-essentials.org.uk

www.ilo.org/public/english/protection/safework/ctrl_banding/index.htm

www.unece.org/trans/danger/publi/ghs/ghs.html

GOHNET Newsletter - Contributors' Information

General

- GOHNET is a vehicle for information distribution and communication for all who are involved, active and interested in the subject areas of occupational health.
- The Editor reserves the right to edit all copy published.
- Contributors of all material offered for publication are requested to provide full names, titles, Programmes or Departments, Institute names, and e-mail addresses.

Why write for GOHNET?

All experts have a professional responsibility to disseminate their views and knowledge. The Network of occupational health experts is constantly growing, and the Newsletter can therefore help you to reach a large audience in the occupational health community. This can help you to make new contacts, exchange views and expertise.

What kinds of article do we publish in GOHNET?

Our diverse audience means that articles should be not only informative but also engaging and accessible for the non-specialist. We do not accept articles based on data that has not been accepted for publication following peer review. Such articles are more appropriate for submission to a journal.

Articles may provide a broad overview of a particular area; discuss theory; add a critical commentary on recent articles within a GOHNET Newsletter; or debate applied, practical and professional issues.

You can view examples of issued Newsletters, which are available at <http://www.who.int/oe/OCHweb/OCHweb/OSHPages/Gohnet/Gohnet.htm>

How should I go about writing my article?

Articles should be written as for an intelligent, educated but non-specialist audience, as the majority of readers will not necessarily be familiar with the topic of any individual article. Articles need to be written in clear, non-technical language, and aim to engage the interest of the membership at large.

Sexist, racist and other discriminatory or devaluing language should be avoided. Articles can be of any length from 800 up to a maximum of 2000 words (excluding references), double spaced, with complete references and a precise wordcount (excluding references). Relevant high-quality scanned image materials is also welcome.

How do I submit my work?

Send your article as an attachment to kortummargote@who.int, or post one copy to:

Evelyn Kortum – Editor of GOHNET
World Health Organization
C/o SDE/PHE/OEH, office L.125
20 Avenue Appia – 1211 Geneva 27 – Switzerland

Counterpoint articles

If you have a view on an article we have published, your best route is an e-mail or a letter to the Editor. If you wish to add a substantial amount of evidence on a significantly different angle, we welcome commentary pieces of up to 1000 words, submitted within two months of the original piece.

Conference or workshop reports

Brief reports on conferences or workshops of interest to a wider audience (any length up to 700 words) should be sent, within a month of the event, to the Editor. Focus on what is new and of general interest, rather than including a lot of background information about the conference.

Reference style

Below is an example of the reference style to be used:

1. Herbert R, Gerr F, Dropkin J. Clinical Evaluation and Management of Work-Related Carpal Tunnel Syndrome. *Am J Ind Med* 2000 37:62.
2. Pelmeur PL. Hand-Arm Vibration Syndrome. An Overview. In: *Hand Arm Vibration Syndrome. HHSC Handbook No. 24.* 1999. P 2.
3. Piligian G, Herbert R, Hearn M, Dropkin J, Lansbergis P, Cherniak M. Evaluation and Management of Chronic Work-Related Musculoskeletal Disorders of the Distal Upper Extremity. *Am J Ind Med* 2000 37:75.

CONTACTS

WHO headquarters

(www.who.int/occupational_health/)

Department of Protection of the Human Environment
Occupational and Environmental Health Programme
Geneva, Switzerland
Fax: (41) 22 791 1383

e-mail: kortummargote@who.int

WHO Regional Advisers in Occupational Health:

Regional Office for Africa (AFRO) (www.whoafr.org/)

Brazzaville, Congo
Fax: (242) 81 14 09 or 81 19 39

e-mail: pulet@afro.who.int

Regional Office for the Americas (AMRO)
(www.paho.org/)

Pan American Health Organization (PAHO)
Washington DC, USA
Fax: (202) 974 36 63
e-mail: tennasm@paho.org

Regional Office for the Eastern Mediterranean
(EMRO)

(www.who.sci.eg)

Cairo, Egypt
Fax: (202) 670 24 92 or 670 24 94

e-mail: arnaouts@emro.who.int

Regional Office for Europe (EURO)

(www.who.dk)

Copenhagen, Denmark

Fax: (45) 39 17 18 18

Regional Office for South-East Asia (SEARO)

(www.whosea.org/)

New Delhi, India

Fax: (91) 11 332 79 72

e-mail: caussyd@whosea.org

Regional Office for the Western Pacific (WPRO)

(www.wpro.who.int/)

Manila, Philippines

Fax: (63) 2 521 10 36 or 2 526 02 79

e-mail: ogawah@wpro.who.int

Editor: E Kortum-Margot

Design: J-C Fattier

© World Health Organization 2004

All rights reserved. Publications of the World Health Organization can be obtained from Marketing and Dissemination, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel: +41 22 791 2476; fax: +41 22 791 4857; email: bookorders@who.int). Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to Publications, at the above address (fax: +41 22 791 4806; email: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

The World Health Organization does not warrant that the information contained in this publication is complete and correct and shall not be liable for any damages incurred as a result of its use.

Printed in Geneva, Switzerland

Printed on paper made from managed softwood plantations, where at least one tree is planted for every tree cut down.

Application form for GOHNET membership

If you would like to join the Global Occupational Health Network, please fill in the form below.

Please print clearly or use a typewriter and send to the editor.

Alternatively you may request a copy of the form by e-mail from kortummargote@who.int or consult our website for an electronic version:
(<http://www.who.int/och/>)

Global Occupational Health Network (GOHNET) Survey Application form for GOHNET membership

Name of Institution:

Mailing Address:

Street & Number: P.O. Box*

City postcode:

Sector & Province*

* only include if necessary for mailing

Country:

Tel** : Fax** :

** Please include codes of country and town

E-mail(s):

Please indicate if you have access to the Internet: yes no

Do you have a Web address? If so, please state:

Do you have access to a computer with a CD-ROM reader? yes no

Contact person: First Name: Family Name:

Title (Dr, Mr, Mrs, Ms, etc.): Sex: F M

Organizational Position/Function:

Department:

Please state any area(s) of expertise which your organization would be willing to share:

.....

.....

Do you have training activities? If so, please describe:

.....

.....

How many staff work in Occupational Health your Organization?

Do you belong to any other health, safety or environmental networks? If so, please describe?

.....

.....

Efforts are being made to supply information in three languages. Please specify your preference:

English French Spanish

(if certain materials are unavailable in the language of your choice, they will be supplied in English)