

OCCUPATIONAL RISK MANAGEMENT TOOLBOX
GLOBAL IMPLEMENTATION STRATEGY
Agreed 28 May 2004 Status Review February 2009

Historical Background

The Global Implementation Strategy aim was to promote research, development, and application of Toolkits to manage different workplace hazards. Each of these efforts was guided with the intent of contributing to development of a broader Occupational Risk Management Toolbox (Toolbox). That this research agenda was developed, published, and substantially followed speaks to its timeliness, the broad international commitment of its proponents, and the considerable effort put towards its execution.

The first Toolkit to be available was the HSE UK COSHH Essentials, which was adapted into the International Chemical Control Toolkit (ICCT). This approach to qualitative or semi-quantitative risk assessment and risk management is called "control banding", grouping workplace risks into "control bands" based on combinations of hazard and exposure information. It can also be applied to non-chemical workplace hazards and is particularly relevant for use in SMEs, developing countries, and in the absence of a quantitative regulatory standard.

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) was 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 workplans, focusing on particular applications, countries or regions, will 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, the SafeWork Programme of ILO, the Occupational Health Programme of WHO, UNITAR, IOHA, HSE, NIOSH, BAUA, GTZ, and Arbo Unie.

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 addition of safety engineers and occupational nurse practitioners to this list was made later as these professions are vital to ensure the broadest applications.

The International Chemical Control Toolkit

The ICCT was the focal point for this ITG implementation strategy with the hazard information employed by the Toolkit being either the EU R phrases, or the hazard statements of the Globally Harmonized System for Classification and Labelling of

chemicals (GHS). The target date for global implementation of the GHS was set for 2008, and individual country implementation remains varied. Hence implementation of the ICCT was to be phased, initially focusing on capacity building, development and testing of control guidance sheets (CGSs), translation into other languages, and application of more generic approaches, such as the GTZs. Implementation of the full ICCT in countries was to be dependent on country use of EU R phrases and/or GHS hazard statements. Pages that follow summarize the levels of success toward this end.

Key Elements of the Implementation Strategy

1. Further development of the ICCT and other chemical control toolkit strategies:
 - ICCT development did not occur quite as planned and ILO recommendations in 2004 for more simplified control guidance sheets (CGSs) did not occur. Rather the COSHH Essentials was used as a primary initial toolkit of choice for many countries, with the ICCT selected at times, for piloting, testing, evaluation and revision. As a result, a number of countries have developed their own chemical control toolkits and associated qualitative risk assessments. The primary driver for this was related national regulatory compliance, such as with REACH, primarily to assist SMEs toward compliance in a manner comparable to the COSHH Essentials' development. This is an impressive list: The Netherlands, Singapore, Germany, Belgium, Norway, Canada, India, and South Korea.
 - In addition to qualitative risk assessments, in the Netherlands a toolkit named "Stoffenmanager" moved further into validated quantitative risk assessments. In fact this toolkit can be used both as a *qualitative* control banding tool and as a validated *quantitative* exposure assessment and control tool, thus serving both non-expert and expert-users.
 - Translation of the COSHH Essentials has been completed in China
 - Important progress has been made on Silica Essentials. HSE developed and expanded the Silica Essentials, and countries like Chile and South Africa have begun regional training and implementation for its intended use. In addition an Asbestos Essentials has been created and task-specific CGSs have flourished.
 - Standardized peer review criteria for CGSs did not occur, however online links have aided sharing and the ICBWs have served in their development.
 - Addition of the skin route of exposure has been addressed by the PPE Essentials in part and RISKOFDERM is a developed dermal exposure model.
 - Translation in other languages has been accomplished for the ICCT, translated into Portuguese in Brasil, and the COSHH Essentials has been translated in China. Draft Spanish translations of Silica Essentials CGSs have been prepared by PAHO/NIOSH.
2. Enhance links between the GHS, the ICCT and other workplace tools.
 - A comprehensive comparison of these elements was performed in India.
 - The process for developing new and updated versions of the IPCS International Chemical Safety Cards now incorporates use of the GHS terminology and labels.

3. Gradually build and promote the Occupational Risk Management Toolbox.
 - As stated above, numerous toolkits are developed, but there is no existing Toolbox, the primary focus of this plan. A Construction Toolbox is advancing.
 - The WHO Collaborating Centres' Workplans have encouraged development.
 - An Ergonomics Toolkit has been advanced by the IEA, in coordination with ICOH and IOHA, and is linked to the ILO work on Ergonomic Checkpoints.
 - TU in Delft and LLNL are developing an occupational safety Barrier Banding.
 - The University of Nottingham and WHO are developing process for a Psychosocial Risk Management Toolkit (PRIMAT).
4. Explore new partnerships for implementation, including:
 - Many GHS implementation and training workshops have occurred.
 - International Association of Labour Inspectors (IALI) had Control Banding introduced by WHO in their meeting of IALI and ILO in Mauritius in 2004.
 - No formal identification of potential donors and granting bodies occurred.
 - A Twinning meeting in Utrecht has developed many ongoing partnerships.
 - Regional strategies and networks on Control Banding are progressing well.
5. The development of workplans in support of this Strategy have worked well.
6. Identify ways to influence national decision-makers, including through:
 - The concept of occupational risk management tools has been included in the WHO Global Plan of Action on Workers Health, which has been endorsed by the World Health Assembly in May 2007.
 - Silica Essentials was discussed in the ICORD meeting in Beijing in 2005.
 - International Control Banding Workshops have flourished (5th In 2009).
 - "Basic Occupational Health Services" has mentioned Control Banding.
7. The attached international research agenda has proved to be well developed.
8. Collect and communicate research and information: see attached reference list.
9. Develop and maintain a capacity building and training plan, focussing on developing countries (WHO-OEH) for piloting work, then implementation.
 - GTZ Chemical Management Guide was implemented in many countries.
 - Regional train-the-trainer groups have developed in India and Latin America.
 - Train-the-trainer workshops have been held with international/regional events.
 - Generic training materials have been translated and piloted for local use.
 - WHO pilot projects in Brasil, India, Peru, Chile have worked well. Other South American countries (Colombia) are also considering or planning control banding activities and workshops. Key persons from South Africa and Benin have been trained on the use of Control Banding.
 - The Ministry of Health in Chile (WHO CC), with the support of NIOSH and PAHO, has worked well with the Silica Essentials, and is constructing a National Plan on the Elimination of Silicosis and use of the silica toolkit.

- Ministry of Manpower in Singapore is assessing the use of the ICCT.
 - The Regional Workshop on the Implementation of Control Banding in Developing Countries was successfully held in 2008 in Chennai, India.
 - Two one-day practical Stoffenmanager training courses were given at the NIOH in South Africa.
10. The International Technical Group has maintained well for 5 years (quarterly telephone conferences, with face-to-face meetings occurring back-to-back with other events if possible), however its focus on overseeing this Strategy has faded.
- Important progress has been on the development of toolkits, the expansion of range beyond bulk chemicals, the expansion of range into other occupational health and safety professions, and with the Regional and International CBWs.
 - The best progress has been made where national regulatory requirements have driven the development of toolkits to assist SMEs and industries without IHS.
 - Control Banding is now an internationally understood terminology.
 - The lack of a developed Occupational Risk Management Toolbox in this timeframe is not a true failure as the construct for doing so is progressing.
 - The persistence of a few individuals is to be highly commended for continuing this process in the absence of centralized funding and program development.

ITG Implementation Plan International Research Agenda

That this research agenda was developed, published, and substantially followed speaks to its timeliness, the broad international commitment of its proponents, and the considerable effort put towards its execution. The Global Implementation Strategy aim was to promote research, development, and application of Toolkits to manage different workplace hazards. Each of these efforts was guided with the intent of contributing to development of a broader Occupational Risk Management Toolbox (Toolbox).

1. Chemical Toolkit Applications in Developing Countries

- Investigate applications within large enterprises.
- Develop tools for SMEs.
- Evaluate effectiveness of predicting exposures.
- Validate options and guidance for controlling exposures.
- Field test most-current products, Toolkits, and control-focused solutions.
- Translate concepts and common phrases.

2. Other Applications in Developing Countries

- Focus on large scale industries, and select appropriate industries and hazards.
- Develop other toolkits for the Occupational Risk Management Toolbox.
- Adapt existing approaches (WIND Program), and build upon successes.
- Develop an Ergonomics Toolkit based on existing models.

3. Chemical Control Toolkit Applications in Developed Countries

- Perform further validation studies.
- Validate options and guidance for controlling exposures in selected small business trades.
- Provide field industrial hygiene technical support and input for expanding, ranking hazards, prioritizing controls.
- Focus on small business trades and identify successes and limitations.

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 (e.g., the skin module of the Stoffenmanager toolkit).
- Integrate skin and inhalation routes of exposure.

- Integrate useful elements from comparable tools, e.g. the German Column Model.
- Perform further validation studies on the underlying models of the toolkits, taking into account the ACGIH review.
- Expand the existing toolkits with a nano risk assessment module (in the near future, qualitatively, in the far future, quantitatively).

ITG Implementation Plan Internet Resources

Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA) (Federal Institute for Occupational Safety and Health, Germany), Safety and Health to Secure the Future, 2007 http://www.baua.de/nn_18306/en/Homepage.html__nnn=true.

COSHH Essentials: Easy steps to control health risks from chemicals. U.K. Health and Safety Executive. <http://www.coshh-essentials.org.uk/>.

Globally Harmonized System of Classification and Labelling of Chemicals (GHS). UNECE (United Nations Economic Commission for Europe). http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.

SafeWork Chemical Control Banding. In Focus Programme on Safety and Health at Work and the Environment, International Labour Organization. http://www.ilo.org/public/english/protection/safework/ctrl_banding/index.htm.

Stoffenmanager: <http://www.Stoffenmanager.nl>.

CPWR — The Center for Construction Research and Training. <http://www.cpwr.com/rp-constructionsolutions.html>.

GTZ (Germany) Chemical Management Guide <http://www.gtz.de/en/themen/laendliche-entwicklung/8758.htm>.

ILO, International Chemical Safety Cards (ICSCs), updated 4 February 2008. <http://www.ilo.org/public/english/protection/safework/cis/products/icsc/>

IOHA Control Banding Links <http://www.ioha.net/cb/control-banding-links.htm>

NIOSH Safety and Health Topic: Control Banding. <http://www.cdc.gov/niosh/topics/ctrlbanding/>.

World Health Organization (WHO). Occupational Health. http://www.who.int/occupational_health/en/.

First International Control Banding Workshop (1ICBW) <http://www.bohs.org/eventDetails.aspx?event=42>
Second International Control Banding Workshop (2ICBW) <http://www.acgih.org/events/ControlBand>

Third International Control Banding Workshop (3ICBW) <http://www.saioh.org/ioha2005/Proceedings/SSI.htm>

Fourth International Control Banding Workshop (4ICBW) http://tech.groups.yahoo.com/group/control_banding_strategies

ITG Implementation Plan References

ACGIH, 2008. Control Banding: Issues and Opportunities: *A Report of the ACGIH[®] Exposure/ Control Banding Task Force*. Publication #08-001. Cincinnati, OH.

Compendium of activities of the WHO collaborating centres in occupational health 2006-2010. World Health Organization, Geneva. 19 Feb. 2007.
http://www.who.int/occupational_health/network/2006compendium/en/index.html.

CPWR. Center to Protect Workers' Rights. Construction Solutions.
(<http://www.cpwr.com/rp-constructionsolutions.html>). 2007.

Eijkemans, G. and I. Fedetov. *Global implementation strategy of the occupational risk management toolbox (control banding)*. in *Third International Control Banding Workshop*. Pilanesberg, South Africa, 2005.

European Commission (EC), *REACH and GHS*. Available at
http://ec.europa.eu/enterprise/reach/index_en.htm. 2007.

Evans, P. and A. Garrod, *Letter to the Editor: Evaluation of COSHH Essentials for vapour degreasing and bag-filling operations*. *Ann Occup Hyg*, 2006. **50**(6): p. 641.

Fingerhut, M., Editorial: Global Quantitative Risk Management (Control Banding) Activities. *Industrial Health* 2008, 46: 305 – 307. Available at
http://www.jstage.jst.go.jp/article/indhealth/46/4/305/_pdf

Fingerhut, M., T. Driscoll, D.I. Nelson, M. Concha-Barrientos, L. Punnett, A. Pruss-Ustin, K. Steenland, J. Leigh, and C. Corvalan, *Contribution of occupational risk factors to the global burden of disease--a summary of findings*. *Scandinavian Journal of Work, Environment, and Health*, 2005. **Suppl 1**: p. 58-61.

Garrod, A. and P. Evans, *Personal communication regarding COSHH Essentials*. 2007.

Jones, R.M. and M. Nicas, *Margins of safety provided by COSHH Essentials and the ILO Chemical Control Toolkit*. *Ann Occup Hyg*, 2006. **50**(2): p. 149-56.

Jones, R.M. and M. Nicas, *Evaluation of COSHH Essentials for vapor degreasing and bag filling operations*. *Ann Occup Hyg*, 2006. **50**(2): p. 137-47.

Jones, R.M. and M. Nicas, *Margins of safety provided by COSHH Essentials and the ILO Chemical Control Toolkit*. *Ann Occup Hyg*, 2006. **50**(2): p. 149-56.

Jones, R.M. and M. Nicas, *Reply to letter to the editor: Evaluation of the utility and reliability of COSHH Essentials*. *Ann Occup Hyg*, 2006. **50**(6): p. 643-644.

Marquart, H., Heussen, H., Le Feber, M., Noy, D., et al. 'Stoffenmanager', a web-based tool using an exposure process model. *Ann Occup Hyg* 52(6):429-41 2008.

Maynard, A.D., *Nanotechnology: the next big thing, or much ado about nothing?* Ann Occup Hyg, 2007. **51**(1): p. 1-12.

Money, C., S. Bailey, M. Smith, A. Hay, B. Hudspith, D. Tolley, J. Dobbie, and H. Jackson, *Letter to the Editor: Evaluation of the utility and reliability of COSHH Essentials*. Ann Occup Hyg, 2006. **50**(6): p. 642-644.

Naumann, B.D., P. Hewett, and P.F. Wambach. *ACGIH Technical Analysis of the Control Banding Risk Assessment Process (RT 222)*. in *American Industrial Hygiene Conference and Exposition*. 2007. Philadelphia, PA.

Nelson, D.I., S.V. Chiusano, A.L. Bracker, L.A. Erickson, C.L. Geraci, M. Harper, C. Harvey, A.A. Havics, M. D. Hoover, T.J. Lentz, R.W. Niemeier, S.D. Ripple, E.J. Stewart, E.A. Sullivan, and D.M. Zalk, *AIHA Guidelines 9-2007. Guidance for Conducting Control Banding Analyses*. Fairfax, VA: American Industrial Hygiene Association, 2007.

Packroff, R. Application safety of chemical products for a new quality of work, presented at Sustainable Chemistry – Implementation of a Scientific Concept in Policy and Economy, 15-16 May 2007, Berlin.
http://www.sustainablechemistry2007.de/Downloads/07_Packroff.pdf.

Paik, S., Zalk, D.M., Swuste, P. Application of a pilot Control Banding tool for risk level assessment and control of nanoparticle exposures. Ann Occup Hyg 52(6):419-428 2008.

Spee, T. *Risk assessment from toxic substances and control measures in the Dutch construction industry*. in *3ICBW*. 2005. Pilanesberg, South Africa.

Tielemans, E., D. Noy, J. Schinkel, H. Heussen, D. Van Der Schaaf, J. West, and W. Fransman. *Stoffenmanager Exposure Model: Development of a Quantitative Algorithm*. Ann Occup Hyg 52(6):443-454 2008.

Zalk, D.M. and D.I. Nelson, *History and evolution of control banding: a review*. J Occup Environ Hyg, **5**(4) 2008.

Zalk DM, P Swuste, *Barrier Banding: a qualitative safety tool for risk prevention based on the Control Banding approach*. Safety Science, 2009 In press.

Zalk, D.M., Paik, S., Swuste, P. Evaluating the Control Banding Nanotool: a qualitative risk assessment method for controlling nanoparticle exposures. J Nanopart Res, 2009 In Press.