



Hazardous substances in the workplace — minimising the risks

Summary of a seminar organised by the European Agency for Safety and Health at Work
(Topic Centre on Research — Work and Health)

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1. Introduction

Objectives

This Forum publication summarises the results of a seminar (15 October 2002, Paris) organised within the framework of the European Agency for Safety and Health at Work's activities for the European Week for Safety and Health at Work 2003, which focuses on the prevention of risks arising from dangerous substances. It is one element in a selection of products that the Agency publishes to support EU Member States in their local activities relating to the European Week for Safety and Health at Work 2003.

This Forum publication is mainly intended for:

- persons involved in policy making in the field of dangerous substances, whether at local, regional, national, or supranational level; and
- persons involved in relevant research in the field of dangerous substances.

The aims of the seminar were to:

- assist in sharing and developing research on the assessment of chemical risks;
- provide input to policy-making by disseminating research from selected fields of interest, namely setting of occupational limit values, substitution models and successful communication of information about dangerous substances;



- explore future research needs and priorities in these fields;
- look at the ways in which this occupational safety and health related research on chemical risks can be translated into good practice in the workplace.

To this end, a wide range of national experiences and practices in the EU were brought together in order to share expertise and stimulate discussion and debate on the theme of minimising the risks caused by hazardous substances in the workplace.

Seminar structure

The seminar focussed on three main areas:

- Classification, labelling, substitution and limit setting for carcinogens in the workplaces, including potency considerations.
- Exposure and control — research on substitution models.
- Safety management — risk perception, risk communication and establishment of good practice concerning dangerous substances (especially research on how to make better use of existing information).

The three topics chosen out of a broad variety of possible themes are also related to three groups of specific stakeholders:

- Topic 1 is mainly useful for policy makers and toxicologists or occupational physicians involved in legislation setting.
- Topic 2 will be interesting for preventive services and OSH professionals who deal with risk assessment and substitution of dangerous substances.
- Topic 3 addresses a service to employers and workers.

Seminar background

The foundation of workplace health and safety legislation, at least in the European Community, is EC legislation — usually directives — made under articles of the Treaty of Rome, amended by the Treaty of Amsterdam, dealing with worker protection (Article 137), and prevention of barriers to trade (Articles 94 and 95). These directives have to be

implemented by Member States and are usually reflected in national legislation. For example, in the United Kingdom, more than half of the health and safety regulations that have been introduced in the past ten years has been of EC origin.

In the context of the seminar topics:

- The basic principles for the use of chemicals in the workplace are as laid down in Directive 98/24/EC (that replaces Directive 80/1107) including the setting of occupational exposure limit values (OELs) and a control hierarchy.
- More stringent measures on workplace carcinogens and mutagens are as outlined in Directive 90/394/EEC and its amendments.

Having made an assessment that the risk to a worker's health and safety of a work activity involving hazardous chemicals is significant, it is then necessary to control these risks. Thus, the risks should be eliminated or reduced to a minimum by, for example, the provision of systems of work and supervision, the cleaning of workplaces, premises, plant and equipment, the provision of engineering controls and/or the use of personal protective equipment.

However, in a hierarchy of control measures, the first option should always be to consider substitution. This is made clear both in the Chemical Agents Directive (Article 6(2)) and the Carcinogens Directive (Article 4 (1)). Substitution will consist of replacing the hazardous chemical by a substance (preparation) which, under its conditions of use, is not dangerous or (failing that) is less dangerous to workers' health or safety or to replace the process accordingly.

Legislation alone, however, is not enough. In spite of the existence of detailed provisions for the improvement of workers' health and safety, and the efforts of OSH professionals over many years to implement them, there is still a significant incidence of work-related health problems. Thus, it has been estimated that about 10 % of the population suffer work-related lung or skin problems (Eurostat ⁽¹⁾). The European Foundation for the Improvement of Living and Working Conditions found a similar picture: the figures for self-assessment of inhalation of dangerous substances (9–11 %) are broadly in line with the Eurostat estimate but only half as many workers (5 %) indicate handling of chemicals at their workplaces. Thus, there seems to be an underestimation by workers of the exposure to dangerous substances in the workplace.

It is therefore important also to pay attention to risk communication. The OSH message has to be got across to the target audience, which is principally the workers themselves. To do this effectively requires research and research translated into good practice.

2. Research and regulation — classification, labelling, substitution and limit setting for carcinogens in the workplaces, including potency considerations

Based on speeches by:

- *Elisabet Berggren, European Chemicals Bureau, European Commission, Italy*
- *Marcel Wilders, Ministry of Social Affairs and Employment, The Netherlands*
- *Peter Wardenbach, BAUA, Germany*

⁽¹⁾ *Work-related health problems in the EU*, Eurostat 2001.

The subject of the first part of the seminar, new developments in carcinogens regulations, especially potency considerations, was chosen as an example to illustrate policy makers' problems in using research results as a basis for regulatory decisions.

Up to now, carcinogens have been classified using a qualitative, evidence-based approach. A carcinogen was classified as such when it was proven to have carcinogenic effects. Consequently, health-based occupational exposure limits (OELs) were not being set for carcinogens, since they were not considered to have a threshold for their effects.

Recently, considerations of the relative potency of carcinogens have introduced a whole new approach to the classification procedure. The tendency is to differentiate between very potent and less potent carcinogens, on the basis of its T25 value ⁽²⁾. In addition to this estimate there are certain elements considered, which might change the potency group for borderline cases, such as the type of dose-response curve, activity due to species, strain or gender, genotoxicity, and toxicokinetics of the substance.

The application of the potency concept enables specific concentration limits to be set for preparations (to be classified and labelled as carcinogenic or not), that might be lower (for high potency substances) or higher (for low potency substances) than the general ones set by the Directive 1999/45/EC on the classification and labelling of preparations. Up to now, specific concentration limits for carcinogenicity were set for 19 substances, of which 18 substances were given lower limits as they have been defined as high potency carcinogens, and only one substance has been given a higher limit as a low potency carcinogen.

In the current work within the EU, the possibility to make potency consideration for substances causing skin sensitisation is evaluated as well. Defined criteria for the consideration of the potency of both carcinogenic and sensitising substances are foreseen to be taken up in the international negotiations of the globally harmonised system ⁽³⁾.

Turning to the limit values (or lack of them) for carcinogens, Directive 90/394/EC requires the substitution of carcinogens with less harmful substances when technically feasible (irrespective of the costs), or the prevention of exposure when possible — preferably by containment — or if that fails, to keep exposure of workers as low as possible. A problem often arises with the assessment of 'lowest exposure possible'. Which points of reference should the labour inspectorate use for this? Besides this so-called ALARA ⁽⁴⁾ principle, OELs are therefore the main tool to control carcinogens at the workplace. At national level, in general, technically based threshold limit values have been established at the workplace for a number of carcinogenic substances.

An approach advocated in the Netherlands, and being considered in Germany, is to use risk-based OELs, that are agreed with industry as a realistic target as a basis for the decisions. These OELs are set within a bandwidth of two risk levels. The choice of such levels is always arbitrary. The upper permissible level was chosen on the basis of the observed mortality rate in the electro-technical industry, which is considered to be relatively safe. The preferred lower risk level

⁽²⁾ This value is the chronic dose rate in mg/kg bodyweight/day leading to tumour formation in a certain tissue in 25 % of the animals used in an experiment.

⁽³⁾ The globally harmonised system for the labelling and classification of chemicals was adopted in December 2002 by the UN Committee of experts on the transport of dangerous goods and the globally harmonised system of classification and labelling of chemicals (CETDG/GHS), in Geneva after a decade of efforts and cooperation amongst a broad number of countries and organisations, notably the Committee, ILO and OECD.

⁽⁴⁾ **As low as reasonably achievable.**

Examples of high potency substances listed in Annex I:

dimethylcarbamoyl chloride	C>0.001 %	R45
N,N-dimethylhydrazine	C>0.01 %	R45
hexamethylphosphoric triamide	C>0.01 %	R45
dimethyl sulphate	C>0.01 %	R45
1,3-propanesultone	C>0.01 %	R45
cadmium fluoride	C>0.01 %	R45
cadmium chloride	C>0.01 %	R45
dibenz[a,h]anthracene	C>0.01 %	R45
1,4-dichlorobut-2-ene	C>0.01 %	R45
bis (chloromethyl) ether	C>0.001 %	R45
2-naphthylamine	C>0.01 %	R45
benzidine	C>0.01 %	R45
dimethylnitrosoamine	C>0.001 %	R45
1-methyl-3-nitro-1-nitrosoguanidine	C>0.01 %	R45
nitrosodipropylamine	C>0.001 %	R45
2-methylaziridine	C>0.01 %	R45
cobalt dichloride	C>0.01 %	R49
cobalt sulphate	C>0.01 %	R49

Example of Low Potency Substance listed in Annex I:

1-chloro-2,3-epoxypropane	C>1 %	R45
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Source: Joint Research Centre

was derived from an environmental risk assessment on the basis of no distinction between acceptable risks for the general public and workers. The upper permissible level is an incidence rate 10^{-4} /yr (1 in 10000); the preferable risk level is 10^{-6} /yr (one in a million). Social partners at branch level are required to deliver exposure data, technical and economic feasibility data to support the preferred risk level and when not feasible to prove otherwise. This results in opinions delivered to the ministry, which will usually approve them. Such an approach has proved effective in controlling risks, although the enforcement agency retains the right to invoke the ALARA principle where necessary.

OELs for carcinogens are only recommended if regularly reviewed. A summary report of the considerations on which the limit value is finally based (scientific, technical, socioeconomic) should be made publicly available and the participation of social partners throughout the process guaranteed.

The third area for discussion broadened the topic to limit values (as a means for worker protection) for substances other than carcinogens, where it might be expected that toxicity and epidemiological data would be available to set occupational exposure limits. In practice, however, progress both at European level with the EU's Scientific Committee, SCOEL^(*), and at national level in the EU Member States, have been rather slow, and differing values for identical substances exist. This has been mainly because of the

(*) Scientific Committee on Occupational Exposure Limit Values, established by the European Commission.

difficulty of agreeing limits when the data on toxicity and epidemiology is in many cases limited or absent.

To speed up the process, it has been proposed to establish provisional health-based occupational exposure limits (HB-OELs). Of course, harmonised assessment factors for time extrapolation, interspecies extrapolation, route-to-route extrapolation, and intraspecies variation will need to be agreed upon for substances with data gaps.

The basis data for the extrapolation exists: the IUCLID^(*) database of EU-high production volume chemicals contains approximately 1 400 chemicals for which data on repeated-dose-toxicity are available. The responsibility of the task force reviewing the IUCLID database (Action 6C of the EU-White Paper: Strategy for a future chemicals policy) should include the establishment of such provisional health-based occupational exposure limits (HB-OELs). Furthermore, industry could assist by submitting provisional HB-OELs for substances notified to the authorities according to the future 'REACH' system.

In Germany a system for deriving provisional HB-OELs on this basis has been accepted. The nordic expert group, or, NEG (Nordiska Expert Gruppen), is also preparing HB-OELs. The NEG has been producing and publishing criteria documents for almost 20 years. During this time the regulatory authorities in the five Nordic countries have used the documents as a scientific basis for setting occupational exposure limit values. The documents written in English have also been used internationally by individual countries and organisations.

Key findings

- The classification of materials as carcinogenic is greatly assisted by the introduction of the concept of potency: mixtures with a proportion of a very low potency carcinogen need not be classified as such, whilst mixtures with a low amount of a very high potency carcinogen should be.
- Because carcinogens are considered to have no definable 'no effect' level, they are not normally assigned occupational limit values. However, setting practical values based on an agreed acceptable risk level, can be useful in enforcement by the regulatory authorities.
- For hazardous chemicals in general, it is possible to set health-based limit values — but only if the toxicity data is available. Strategies are being investigated to set provisional values based on extrapolation from limited data.

Some points of discussion:

- research should be directed towards establishing the role of occupational exposure limits in an overall strategy of risk assessment;
- strategies should be further developed to speed up the establishment of limit values for the vast number of hazardous substances for which no limits exist.

(*) International Uniform Chemical Information Database, IUCLID is a comprehensive chemical database. The data, which it contains, has been collected in a structured fashion through an obligation put on producers and importers of high production volume existing chemicals by the existing chemicals regulation. Most of it is non-confidential and therefore publicly available. (<http://ecb.jrc.it/cgi-bin/reframer.pl?A=EX&B=/existing-chemicals/datavail.htm>).

Risks	Acute health hazards	Chronic health hazards	Environmental hazards	Fire and explosion hazards	Hazards caused by the exposure potential	Hazards caused by the procedures
very high	highly toxic	K1, K2, M1, M2	N: water pollution	extremely flammable	gases, dusts	open
high	toxic, highly corrosive	R1, R2, K3, M3	class: WGK 3	highly flammable	highly volatile	
medium	harmful, corrosive	R3	WGK 2	flammable	volatile	closed
low	irritant	chronically affecting	WGK 1	hardly flammable	low volatile	
negligible	harmless by experience		not water polluting	inflammable	solids	tightly closed

BIA Column model.

3. Controlling the risks — exposure and control — research on substitution models

Based on speeches by:

- Wolfgang Lanfers, Berufsgenossenschaftliches Institut für Arbeitssicherheit (BIA), Germany
- Robert Piringer, Allgemeine Unfallversicherungsanstalt (AUVA), Austria

The subject of the second part of the seminar, exposure and control — research on substitution models, aimed to address options and strategies of substitution of dangerous substances in the context of controlling risks to hazardous chemicals in the workplace. Various substitution models and schemes have been elaborated recently to enable enterprises (especially small- and medium-sized enterprises, SMEs) to assess the relevant risks, and set priorities for substitution of dangerous substances used.

However, substitution can be a complex and demanding procedure and sometimes requires detailed investigation. In order to help enterprises in assessing important factors to be taken into account in the evaluation of a substitution strategy, simplified models have been developed based on theoretical considerations and validated in practice. Some of these tools have been presented at the seminar and their validity and usability as well as their advantages and limitations were a subject of discussion.

One such simplified scheme is the 'column model' (?), developed at BIA (?). This model categorises the risks at five levels (from very high to negligible) in each of five hazard areas, displayed as columns in a simple table:

- acute and chronic health hazards;
- environmental hazards;
- fire and explosion hazards;
- hazards caused by the exposure potential;
- hazards caused by the procedures.

The necessary information is available for labelled substances (e.g. as 'R' risk phrases) or from simple non-technical descriptions e.g. highly volatile liquid. The analysis is done both for the original material and the potential substitute. It can be used for pure substances as well as for preparations or mixtures.

(?) http://www.hvbg.de/d/bia/pramodell/spalt_e.pdf

(?) The BIA supports the German Berufsgenossenschaften (institutions for statutory accident insurance and prevention) and their organisations particularly in solving scientific and technical problems relating to safety and health protection at work.

In the case of a better rating of the potential substitute product in all five columns than the product in use, the substitution problem is solved. If the potential substitute product rates better in some columns, and worse in others, an assessment has to be made which potential hazards — in other words, which columns — play a major role in a particular situation. If, for example, sources of ignition cannot be avoided in a production process, then the fire and explosion hazards and the exposure potential are the most important factor in the comparison.

With this model, a comparison can be made very quickly, using only limited information. The target groups for using this model are managers, safety personnel and other persons with limited knowledge in this area.

This model is typical of a number of simplified procedures being developed in Member States, since it has become apparent that existing risk management tools are too complicated and require information not readily available in SMEs and perhaps not at all.

On the wider front of risk assessment (but including substitution as a primary strategy) eleven such simplified models have been evaluated in the context of occupational dermal exposure (EC project Riskofderm (?)).

Review of following substitution models

- ✎ COSHH Essentials, United Kingdom
- ✎ EASE model, United Kingdom
- ✎ Guidance on workplace monitoring, AUVA, Austria
- ✎ Column model, Germany
- ✎ TRGS 440, Germany
- ✎ Giscode, Germany
- ✎ MALcode, Denmark
- ✎ Ranking of potential risks, INRS, France
- ✎ CSST: Solvents, skin hazard index, Canada
- ✎ Strategy for protective glove selection, TNO, Netherlands
- ✎ Enviroderm Risk Assessment Scheme, United Kingdom
- ✎ NEW: Riskofderm, EU-project, international (TNO)

Allgemeine Unfallversicherungsanstalt, Austria.

(?) Risk assessment for occupational dermal exposure to chemicals http://www.iras.uu.nl/research/projects_exp_assess_occ_hyg/ex02.php

Most of these specifically address exposure by inhalation, but are easily adaptable to other exposure routes, others are more general. Nearly all use 'R' phrases as the starting point, since these are (supposed to be) generally available. Some, e.g. COSHH Essentials, do not specifically address substitution, but are a general framework for risk assessment and control.

The following features were described and compared in the models examined:

- purpose of the approach;
- target user group (experts, non-experts);
- categories for description of hazard (relying on 'R' phrases or not);
- categories for description of exposure, i.e. by inhalation or skin;
- scope for description of other factors;
- categories for description of control and protection measures;
- technique for presentation to users, such as electronic tool, booklet, database.

It was also determined whether the scheme is combining all data to assess risks (digits, classes, labels).

The results of the comparative study are shown in the following table.

Key findings

- It has become apparent that existing risk management tools are too complicated and require information not readily available in SMEs and perhaps not at all. It is essential that simplified procedures are developed in Member States, capable of handling missing data, but not simplified to the point where wrong decisions are made.
- A number of such simplified models are under development, and have proved effective in early trials.

Some points of discussion:

- research should be directed towards establishing the effectiveness of the simplified models, especially for SMEs, against the background of a full professional occupational hygiene assessment;
- consideration should be given to the development of a universal assessment scheme, based on the best of the existing simplified models.

RESULTS: Comparative study of 11 substitution and risk assessment models.

feature	model											
	COSHH	EASE	AUVA	Column model	TRGS 440	Giscode	Malcode	INRS	CSST	TNO	Enviro-derm	Riskof-derm
experts	●	●	●	●	●	●	●	●	●	●	●	●
non-experts	●		●	●		●	●					●
Hazard:	●	●	●	●	●	●	●	●	●	●	●	●
— R-phrases	●		●	●	●			●	●	●		●
— no R-phrases		●	(●)	(●)	(●)	●	●		(●)		●	●
Exposure:	●	●	●	●	●	●	●	●		(●)	●	●
— inhalation	●	●	●	●	●	●	●	(●)				
— skin	(●)	(●)	(●)			(●)	(●)	(●)		●		●
Other factor:			●			●				(●)		●
— some						●						
— detailed			●							(●)		●
Risk:												
— digits			●		●			●	●			●
— classes	●	●	●	●				●		●	●	●
— labels						●	●					
Control m.	●	●	(●)	(●)		●	●				●	●
Available as:												
— booklet	●		●	●	●	●	●	●		●	●	*
— programme		●				●			●			*
Publisher:												
— authority	●	●		●	●		●					
— work insur.			●			●						
— private org.										●	●	
— research								●	●			●

● well included or dealt with (●) partially included or dealt with * not yet available for the public
 Allgemeine Unfallversicherungsanstalt, Austria.

4. Risk communication — safety management — risk perception, risk communication and establishment of good practice concerning dangerous substances

Based on speeches by:

- Max Lum, National Institute for Occupational Safety and Health, USA
- Norbert Kluger, Arbeitsgemeinschaft der Bau-Berufsgenossenschaften, Germany
- Len Morris, Health and Safety Executive, UK
- Michael Topping, Health and Safety Executive, UK

The third topic, linking to the first two, dealt with risk communication and good practice experiences related to risk communication.

One of the main problems at the workplace is to get the information to be communicated in a comprehensible format, be able to present information in an appropriate way, so that justifiable decisions can be made about appropriate workplace control measures and their prioritisation in particular situations. This is especially difficult when dealing with dangerous substances in the workplace when often the target audience is chemically naïve. It is difficult for information providers as well as for the users of information, but is crucial for a genuine and continuous improvement of working conditions where dangerous substances are used.

Moreover, employers and workers should be enabled to participate in this process as informed partners. In other words, a key factor in any future improvement is an increase in worker awareness of health and safety issues — indeed an increase in awareness in all stakeholders in the H and S system; employers, workers, government, local authorities, employers associations, trade unions, and OSH professional bodies.

Successful examples of risk communication were presented and discussed in this part of the seminar as well as the theoretical background. All four presenters took as their starting point the need to reduce risk communication to its essentials. How do we ensure that the message gets to the worker and that there is a real improvement in safety or health? Progress is most likely when both worker and employer cooperate.

The communication of risk, of course, involves an understanding of the relationship between a potential hazard and the likelihood of it happening, i.e. hazard x probability. But perhaps more important is the additional factor of perception — varying from apathy to outrage — that can itself be influenced by public or political pressures.

Having identified a risk, how does one communicate this effectively to the target audience and the worker him/herself? Each year, the OSH research community publishes some 35 000 reports worldwide — how much of this is read? How much of the paper advice issued by the regulatory authorities is actually read?

A recurring theme was that perhaps the Internet is a solution. This is increasingly the place to look for information, and nearly everyone has access. However, a JAMA ⁽¹⁰⁾ study in the US found that ‘most of the time, health information in the Internet is hard to find, hard to read, often incorrect and incomplete even on the best sites’. Nevertheless, this is due to bad webpage design, not of the Internet itself. With some effort, the advantages of accessibility and two-way interaction on the web could make all the difference. There is a need for quality control procedures on information presented on the web.

⁽¹⁰⁾ Journal of the American Medical Association.

A practical example of tailored information: the German GISBAU system ⁽¹¹⁾

The German construction industry has developed a series of generic sheets that can be applied across a range of products and product groups, which are simple to understand and simple to apply in the majority of cases. The aim is to inform about the large variety of chemical products in the construction industry using a limited amount of easy to use product-group information.

Usually, numerous hazardous materials, which are very similar in their composition, are offered for the same application purpose by different manufacturers. The risks to health and necessary protective measures for these products are also very similar.

Within the last few years, in cooperation with the producing manufacturers and the construction companies a product-group information system for many areas of the construction industry was designed. This includes a coding system that allows for comparison between different products, GISCODE. The assignment of the product to the right product-group information is related to a code of characters and numbers, the GISCODE or product code. The manufacturers print the code in the price lists, safety data sheets and on the containers.

In the near future, for almost all areas of the German construction industry, product-group information will be available.

This approach may easily be adopted for other sectors, which are in a comparable situation.

Of course, not everyone has access to the Internet, and there may still be some restrictions on workplace access. There is still a place, therefore, for conventional communication channels in the form of hazard information and control guidance sheets.

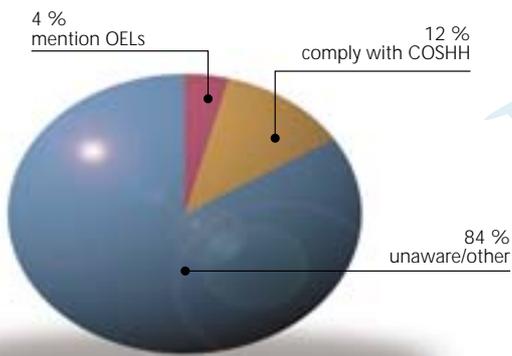
The role of conventional communication channels has also been evaluated by HSE ⁽¹²⁾. Traditionally HSE has relied on generic and sector-specific guidance publications to communicate advice on best practice and compliance standards. A project looking particularly at small firms that used chemicals found that most such firms were characterised by non-hierarchical structures, low knowledge of chemical hazard warnings, and relied heavily on oral communication. Advice from suppliers, trade associations or informal networks was often perceived as the most trusted source of information about chemical risks, as well as learning from experienced workers. Container labels and posters were the most important sources of written information, limited use was made of safety data sheets.

The project concluded that a ‘mental models’ approach was the most effective way of developing risk messages. This involved identifying the target audience’s knowledge and understanding about hazards, risks and control measures and mapping these on to expert models of risk in order to identify critical knowledge gaps. While this approach can be used to good effect in tailoring risk messages to the needs of a particular group of workers, it suffers the practical limitations of being time-consuming and expensive. Taking into consideration some of the wider economic and social factors that determine risk behaviour, sixteen generic principles for the design of effective risk messages were proposed, emphasising the importance of a user-centred approach.

⁽¹¹⁾ <http://www.gisbau.de/>

⁽¹²⁾ The UK Health and Safety Commission (HSC) and the Health and Safety Executive (HSE) are responsible for the regulation of almost all the risks to health and safety arising from work activity in Britain.

Firms using chemicals - awareness of legal requirements



Health and Safety Executive, UK.

In practice, the needs of users in small firms may not be fully met by written guidance and a wider range of media and approaches needs to be considered. In addition to electronic tools, a number of options are under discussion including greater use of the chemical supply chain as a route for advice, use of trusted intermediaries such as trade associations, use of networks such as trade unions and simple management decision aids and checklists. Training also has a vital role in increasing awareness and competence. Interactive training programmes, which involve employees in their design and delivery, can increase the effectiveness of occupational hygiene control measures by highlighting risk factors, encouraging worker participation and reinforcing safe work practices.

HSE also discovered that, in spite of promulgating (COSHH) regulations and occupational exposure limits, very few small firms even know about COSHH let alone implemented it.

Thus, based on the observations that SMEs rely heavily on label information and product safety sheets and like advice on exactly what they should (or should not) do to comply, HSE has developed an electronic version — COSHH Essentials.

Early indications are that the Internet version is much more successful than the paper one, but perhaps that is because it is free! Research has also shown that small firms see the distinctions government make between health, safety and environment as irrelevant to them. They want to know how to control chemicals so as to meet all regulatory requirements. To address this need work has started on developing chemical essentials. This aims to develop the COSHH Essentials approach to produce integrated guidance for small firms on controlling health, safety and environmental risks from chemicals.

Key findings

- There is more to risk communication than simply providing technical information and more to worker response than simple technical understanding. It is essential to understand the process of communication — from an understanding of the risk (hazard x probability x perception) to the social, economic and political factors that influence peoples' response to a perceived risk.
- There are indications that the information in safety data sheets needs to be translated for use in SMEs, e.g. into workplace instructions or check-lists.
- The Internet appears to be a more effective communication channel than conventional 'paper' media, but other options, particularly if interactive, should not be discounted.

Some points of discussion:

- research should be directed towards establishing the effectiveness of risk communication — measured by actual improvements in workplace health and safety;
- the role of the Internet — with well-written, well-structured and interactive sites — should be further investigated.

5. Comments from social partners

An opportunity was then given for the two sides of industry, employees and management to give their views.

Torben Jepsen of the UNICE working group on chemicals at work and from the Danish employers association, representing the employers, noted that current EU OSH legislation, coupled with the new EU chemical's policy, provided a good framework for eliminating or minimising the risks from the use of chemicals in the workplace. However, implementing the legislation was more difficult.



In particular, he felt that the process of setting OELs should be speeded up but feared that it could be delayed by rigorous scientific reflections and ethical discussions on acceptable risk unless new methods and procedures — especially regarding carcinogens — were adopted. He agreed that substitution was a good option, but stressed that it should be implemented with care to avoid unwittingly substituting a less safe alternative. He also asked for more sector-specific guidance on risk assessment, substitution and risk communication.

Jean-Claude Bodard of the European Trade Union Congress, representing the unions, also felt that the legislative background was sufficient, but asked for more transparency in the decision-making process. He also supported the development of OELs, particularly for carcinogens, and the promotion of substitution as a strategy for reducing risk, when properly applied. He emphasised that the worker him/herself is often the best person to be involved in the risk assessment process, since the worker is the person most intimately involved in the job or process carrying the risk.

6. Comments from EU Commission

Finally, Jaume Costa of the Directorate-General for Employment and Social Affairs, European Commission, gave the Commission view.

He also supported the view that current EU OSH legislation, coupled with the new EU chemical's policy, provided a good

framework for eliminating or minimising the risks from the use of chemicals in the workplace. However, he agreed that implementation should be facilitated by guidelines on assessment and enforcement, identification and promulgation of good practice and generally an increase in awareness of OSH issues to create a new culture where OSH was seen as central — 'mainstreaming'. Secondly, he noted that the new chemicals strategy to be outlined by the White Paper should be finalised soon and is high in the EU Commission agenda. Thirdly, the EU Parliament has proposed in the preparations for the Carcinogens Directive to introduce OELs also for carcinogens, and in order to facilitate the discussion, requested IARC⁽¹³⁾ to provide report on status and trends in occupational cancer.

7. Concluding remarks

In conclusion, the Chairman, Richard Brown of the UK Health and Safety Laboratory, noted the main conclusions and recommendations from each session:

A general consensus had emerged that the concept of an occupational exposure limit or limit value was a key feature of an assessment of the risk to workers of hazardous chemicals. However, it was accepted that many such values did not exist or were based on insufficient evidence. A common approach of EU Member States, sharing resources and including carcinogens, would be worth discussing.

Another common theme in the presentations and discussions was the **particular problems of the smaller workplace — the so-called SMEs**. Thus whilst all workplaces had to implement the EU OSH legislation, SMEs had particular difficulty in implementing complex technical legislation with limited technical expertise and often the absence of a dedicated OSH professional. Simple guidance was therefore needed to assist in the process of risk assessment and control.

Closely associated with the provision of guidance is the matter of effective communication. This is perhaps the Cinderella subject — it has been assumed for too long that it was sufficient to have the advice available and the received message technically understood. In practice, risk communication is a complex process, involving social and psychological factors, and is as yet poorly understood. **More research on the effectiveness of communication strategies**, including the use of the Internet, and the sharing of good practice examples, **is needed** to realise the ultimate objective of creating a sustainable OSH culture at the core of work activity.

⁽¹³⁾ The International Agency for Research on Cancer (IARC), established in 1965 as part of the World Health Organization, has as a mission to coordinate research into cancer, with the aim of providing a scientific basis for cancer prevention.

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The output of the seminar aims to:

- stimulate discussion of the subject in the research community;
- provide input to policy-making.

8. Further information

The Agency is producing a series of other products and undertaking activities to support the European Week for Safety and Health at Work 2003. These products include:

- a series of factsheets providing general information on the prevention of risks caused by dangerous substances at the workplace;
- a report examining case studies of successful communication measures for the transmission of information relating to dangerous substances;
- a magazine, with a range of articles aimed at OSH professionals, intermediaries, and policy makers looking for broad information on this large topic area. The material is intended to stimulate high level discussion in this area.

The Agency also invites nominations for the fourth European Good Practice Awards on occupational health and safety. The 2003 award scheme will recognise companies or organisations that have made outstanding and innovative contributions to the prevention of risks from dangerous substances at work within enterprises. This includes prevention of risks from both chemical and biological substances.

More information on the Agency's activities and products for the European Week for Safety and Health at Work 2003 on dangerous substances is available at <http://osha.eu.int/ew2003/>. This source is being continually updated and developed.

Further information on occupational safety and health and dangerous substances can be found on <http://europe.osha.eu.int/> under several headings, including:

- occupational exposure limits http://europe.osha.eu.int/good_practice/risks/ds/oe/;
- good practice http://europe.osha.eu.int/good_practice/risks/ds/;
- research <http://europe.osha.eu.int/research/rtopics/rds/>

The EU White Paper on a strategy for a future chemicals policy is available on the Internet at <http://europa.eu.int/comm/enterprise/chemicals/chempol/whitepaper/whitepaper.htm>.



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