Pergamon

PII: S0003–4878(98)00056–8

Ann. occup. Hyg., Vol. 42, No. 6, pp. 367–376, 1998

Printed in Great Britain.
0003–4878/98 $19.00 + 0.00

An Introduction to a UK Scheme to Help Small Firms Control Health Risks from Chemicals

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The Control of Substances Hazardous to Health Regulations 1994 (COSHH), provide the main British legislation to protect against health risks arising from hazardous substances used at work. Under the regulations, employers have a duty to carry out a suitable and sufficient risk assessment and take steps to ensure exposure is adequately controlled. The paper by Topping *et al.* (1998) concluded that small firms need more basic, readily available advice on how to effectively control hazardous substances. To meet this need the Health and Safety Executive (HSE) and the Advisory Committee on Toxic Substances (ACTS) have developed a new scheme for the UK. It involves a simple system of generic risk assessments to identify appropriate control strategies and a series of control guidance sheets providing good-practice examples of those strategies for common operations. The approach builds on earlier industry risk banding schemes and HSE's general approach to risk assessment and risk management. To help ensure the advice reaches small firms, HSE is seeking to involve key intermediaries in its dissemination. This paper describes the rationale for the new UK scheme, how it sits in the legal framework, and proposals for its dissemination. The papers by Brooke (1998) and Maidment (1998) set out in detail the technical basis for the scheme. Crown copyright © 1998. Published by Elsevier Science Ltd on behalf of BOHS.

INTRODUCTION

Background

The Control of Substances Hazardous to Health Regulations 1994 (COSHH), provide the main British legislation to protect people against the health risks arising from hazardous substances, including chemicals, used at work. Under these regulations, employers have a duty to carry out a suitable and sufficient risk assessment and take steps to ensure exposure to hazardous substances is adequately controlled. Also under these regulations, the UK Health and Safety Commission (HSC) establishes occupational exposure limits (OELs) for individual substances hazardous by inhalation, to define the adequacy of protective control measures.

At present, OELs exist for around 600 substances, generally covering those most widely used, and there are over 100,000 substances listed in the European Inventory of Existing Commercial Chemical Substances (EINECS). To assess compliance with an OEL often requires expertise and special monitoring equipment that for many small firms will not be available in house. Such monitoring is not, of course, an end in itself: where it shows failure to comply with an OEL, firms need to take steps to introduce adequate control measures. To ensure that adequate control is achieved for substances that have not been assigned OELs, it is recommended in the COSHH Approved Code of Practice (ACoP) (HSE, 1997a) that employers, as part of their risk assessment, determine their own working practices and in house standards of control (for example, by comparison with existing standards). This may also be outwith the immediate capabilities of many small firms.

The major HSE-sponsored survey of industry's perception and use of OELs (Research International, 1997), was designed to establish how far OELs influenced control of exposure, particularly in small firms. The key findings (Topping *et al.*, 1998), show that real knowledge of OELs was limited and that they play little direct part in workplace risk management. They also highlighted strong reliance on advice from suppliers and on common sense judgements in deciding risk management measures. The findings confirmed

Received 4 March 1998; in final form 11 May 1998.
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HSE's anecdotal evidence that small firms were having difficulty with the OEL approach and needed extra help to meet their duties under COSHH.

In considering, with the HSC's Advisory Committee on Toxic Substances (ACTS), what further help should be provided, and against the backdrop of HSC's continuing aim to improve health and safety in small firms, HSE identified four criteria which, if met, would lead to a useful and workable new approach:

1. advice should of practical help to small and medium sized enterprises (SMEs);
2. the best use should be made of any available hazard information;
3. the approach should be easy to use and understand; and
4. any information should be readily accessible to SMEs.

One option was to produce guidance on setting 'in house' limits, but this approach was unlikely to satisfy the success criteria. Small firms are generally unaware of existing OELs, and are unlikely to have the necessary expertise to translate such guidance into appropriate control measures. ACTS agreed that what firms needed was clear, good practice advice on appropriate control approaches to protect health, and how to select them. This is the objective underlying the new scheme HSE has developed with a working party established by ACTS (See Acknowledgements).

There were two major challenges in developing a scheme which would meet the success criteria. Firstly the need to take account of the range of health risks presented by the myriad of chemicals in regular use and the wide variety of possible use scenarios. Secondly the need to find ways of getting the information to SMEs. To meet the first challenge the working party developed a simple system of generic assessments based on readily available hazard information and likely use scenarios. Through analogy with substances with similar hazardous properties which have been assigned OELs, it is possible to determine a range of adequate control strategies and control advice. The Working Party then explored a number of approaches for disseminating the information to SMEs.

A number of industry sectors have developed tailored schemes of this type (CIA, 1992; CIA, 1997; Gardner and Oldershaw, 1991; Money, 1992a, 1992b; Naumann *et al.*, 1996; Royal Society of Chemistry, 1996) and in that respect the approach is not entirely new. This scheme in part draws from and builds on earlier schemes, and the involvement of authors of some of these other schemes on the ACTS working party has been invaluable. However development of a generic scheme specifically aimed at SMEs, and including control advice, has not been previously attempted. This paper describes the rationale for the new UK scheme, how it sits in the existing legal framework and proposals for dissemination of the control advice. The papers by Maidment (1998) and Brooke (1998) make specific reference to other schemes where appropriate.

THE SCHEME

Rationale—core model

The technical basis, or core model, of any generic scheme to identify control approaches needs to include factors that would be considered in a workplace risk assessment of a chemical. Thus the model considers the intrinsic health hazard and surrogates for exposure potential, using information that will be readily available to firms and intermediaries. To address the wide range of substances available and the number of use scenarios, each of these factors and the possible control approaches need to be grouped in some way. Therefore in essence, the model is a process of grouping hazards, exposure potential, and combinations of these to generate a set of control approaches. The following paragraphs explain how these groupings are carried out. The rationale and validation for the groupings are set out in the papers by Brooke (1998) and Maidment (1998). Figure 1 summarises the process.

Hazard

To satisfy criterion (2) and make best use of available hazard information, the model uses the R-phrases assigned to substances during classification by suppliers under the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (CHIP) to represent human health hazard. This information is readily available to the user, as assigned R-phrases should be stated on the Safety Data Sheet required by CHIP to be provided when a chemical or preparation is supplied for use at work.

To keep the scheme easily workable [criterion (3)], R-phrases have been assigned to one of five hazard bands, A–E. Bands A–D have associated ranges of

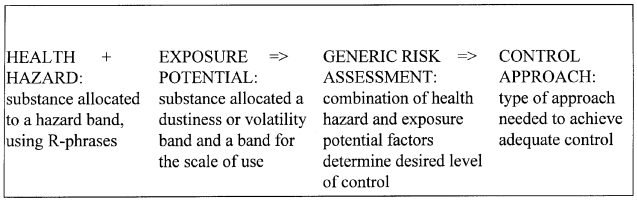


Fig. 1. Factors used in the core model to identify the appropriate control approach.

exposure by inhalation for dusts and vapours. These exposure ranges are considered to represent an adequate level of control for the substances assigned to each band, taking as a basis for validation recently reviewed health based occupational exposure limits. Band E contains substances presenting the most serious health effects (e.g., carcinogens) and signals that generally very tight controls will be needed and specialist advice should be sought. There is also a sixth band, S, to which substances harmful by contact with skin and eyes can be assigned, in addition to Bands A–E. Band S serves to emphasise where precautions are needed to protect skin and eyes.

While this approach has the advantage of using readily available hazard information, it does mean that the application of the scheme is restricted to substances considered for classification under CHIP. It thereby excludes chemicals such as pesticides and pharmaceuticals that are outside of the scope of the Regulations. It also means that the scheme does not apply to process generated hazards such as wood dust. Recognising these limitations, it was felt that the use of R-phrases would still cover a sufficiently wide range of hazardous chemicals in day-to-day use to make the scheme valuable and workable.

Exposure potential and control approaches

Having identified health hazards and acceptable ranges of exposure, it is necessary to establish exposure potential. This is critical in determining how much of a substance is likely to become airborne and, therefore, the type of control needed to reduce exposure to the acceptable range.

The model uses two factors to represent exposure potential: physical properties (the dustiness of solids and volatility of liquids), and the amount used in an operation or batch process. Again, to keep the scheme workable and easy to use, simple definitions of high, medium and low dustiness and volatility are given, and the amount is divided into three groupings of small (g, ml), medium (kg, l), and large (tonnes, m^3).

The last elements of the model are the control approaches and these are summarised in Fig. 2.

Drawing all of the elements together, the paper by Maidment (1998) describes the work to establish exposure potential and how the control approaches were then applied to achieve levels of exposure in line with the exposure ranges for hazard bands A–D. Importantly, it also discusses validation of the conclusions.

Shifting from the factors that make up the model to how it works in practice, Fig. 3 provides an example demonstrating the combination of dustiness and amount in use to identify the appropriate control approach for a solid chemical allocated to hazard band C. Flow-charts exist for hazard bands A–D for both dusts and vapours.

Overview

Having established a model to help select control approaches, simple 'good practice' advice for firms on how to comply with them can be provided. The working party considered this advice could be made more useful if presented as examples of the controls applied to particular operations. The general advice element of the scheme is therefore complemented by a series of operation-based control guidance sheets. Figure 4 provides an overview of the scheme showing how the elements of the model fit together to identify the control approach and advice. To ensure the advice in the scheme actually reaches SMEs, HSE would like to build on existing information routes through intermediaries (e.g., suppliers, trade associations, trades union health and safety representatives, and occupational health professionals) and involve them in helping firms identify and access the control guidance sheets they need.

Guidance on using the scheme

To enable the scheme to be used by a wide range of audiences, the core model is presented as simple, step by step guidance that makes good use of colour coding and a checklist to take the reader through the assessment process to identify the control approach for the chemical in question. It contains a single page of advice on each of the control approaches (summarised in the paper by Maidment, 1998), and a chart to help identify the control guidance sheets appropriate to the

Control approach 1 - General ventilation. This means a good standard of general ventilation and good working practices are needed. For many very small uses of some hazardous substances, ventilation from doors, windows and extractors are likely to be adequate.

Control approach 2 - Engineering control. This includes local exhaust ventilation ranging from a single point extract close to the source of hazards, to a ventilated partial enclosure. It also covers other engineering methods of control, eg cooling coils for vapours, but not complete containment.

Control approach 3 - Containment. This requires the hazard to be contained, or enclosed, but accepts that there may be limited, small scale breaches of containment in some instances.

Control approach 4 - Special. This means expert advice is needed in selecting the right control measure.

Fig. 2. Control approaches used in the scheme.

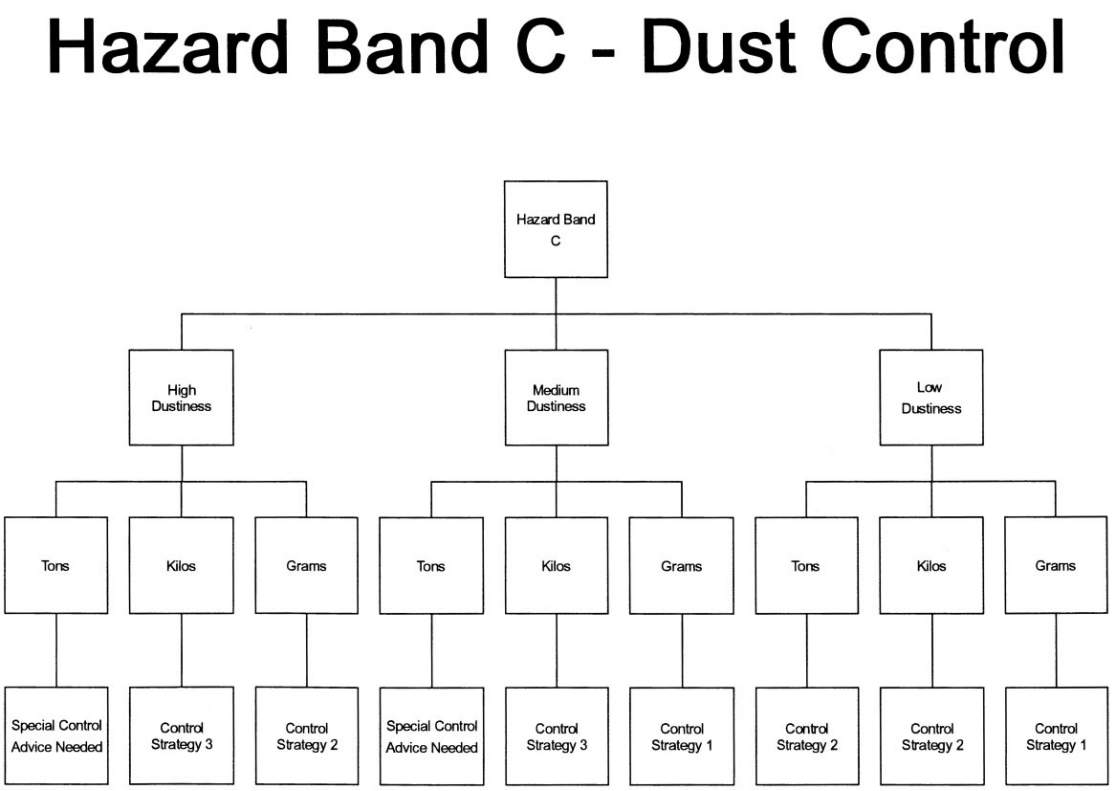


Fig. 3. Combinations of factors affecting selection of the appropriate control approach for solid chemicals assigned to hazard band C.

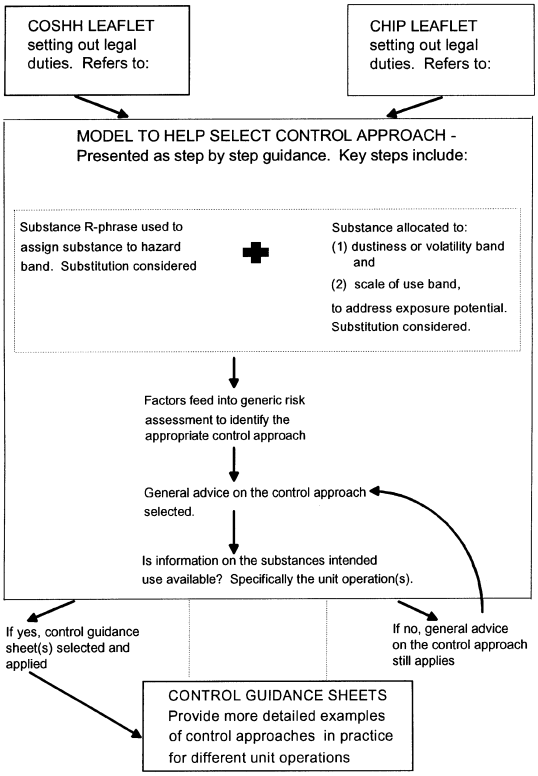


Fig. 4. An overview of the scheme.

operations in question, making it clear when expert advice must be sought, particularly for the 'specialist' advice approach. In preparing the guidance, HSE has taken into account the views of intended audiences through market research and wide consultation. This was considered particularly important to engender confidence in a different approach and to encourage its take up.

Control guidance sheets

The control guidance sheets are intended to provide small firms with advice on how to apply control approaches 1–3 in practice and represent 'good practice' advice. In discussion with the working group, it was agreed that the sheets should be based on unit operations rather than specific processes. These are listed in Fig. 5. This has the advantage of providing the broadest base of advice for the widest number of firms using chemicals. It also allows cross-referencing to existing process-specific advice where a need is identified by HSE and industry.

HSE contracted out the preparation of the sheets to a company with experience of advising small firms on chemical control in a range of industries. In compiling the 60 or so sheets for the scheme, consideration had to be given to the control approach to be represented, the unit operation, examples of the approach appropriate to small, medium and large scale use of the chemical, and whether it was in a solid

Mixing/blending	Filling container/tank	Dipping
Transfer	Emptying container/tank	Sampling
Screening & sieving	Weighing	Curing
Storage (and spills)	Pelletising	Painting (brush)
Coating	Drying	Painting (spray)

Fig. 5. Unit operations addressed by the control guidance sheets.

or liquid form. HSE also wanted examples of cost effective control solutions that would appeal to SMEs.

The two-sided sheets (Fig. 6) are intended to provide firms with enough information to check the adequacy of existing control measures or to put the right control in place. To make the sheets usable for SMEs with little or no occupational hygiene expertise, they are written in a jargon-free style and contain simple diagrams of the control in use. They cover basic information on setting up the specific control and good operational practice. This is supported by advice on PPE, training needs, maintenance and housekeeping, and examination and testing. Each sheet also contains a simple operator checklist, references to appropriate further information and pointers to safety and environmental requirements. To encourage their wide promulgation, the sheets will be freely reproducible providing HSE is acknowledged as the source. Again, to help ensure the advice on the sheets really is of practical use to firms [criteria (1)], HSE commissioned market research at different stages to inform their content, pitch and layout.

LEGAL FRAMEWORK

Since the introduction of COSHH in 1988, emphasis has been very much on individual risk assessments. A scheme that involves a form of generic risk assessment and wide ranging examples of good practice control advice is therefore an important change of approach for HSE. That said, the working party considered it was important for the new scheme to work within the existing and well established frameworks of COSHH, for employers using chemicals, and the Chemicals (Hazard Information for Packaging) Regulations, for suppliers, and for it to take account of the recently adopted EC Chemical Agents Directive (EU, 1997). To help put the scheme in its legal context, the guidance and control guidance sheets will be introduced in revised versions of the popular free HSE leaflets *COSHH—A brief guide for employers* and *The complete idiot's guide to CHIP*. The former is being revised to address trade union health and safety representatives (TU reps), occupational health specialists and trade associations as well as employers, while the latter will still be aimed at suppliers of chemicals but will also be of interest to some trade associations.

The scheme provides pragmatic help for firms with their risk assessment and the identification of adequate control measures provided in examples of good practice. However, use of the scheme will not in itself constitute a suitable and sufficient workplace risk assessment as required by regulation 6 of COSHH. Employers should still consider other factors in their risk assessments, such as the need for health surveillance and the need to monitor exposure to ensure adequacy of control. Similarly, they will want to consider the suitability of the controls recommended by the scheme for their particular work situation. The scheme is therefore guidance to aid employers' risk assessment and selection of control measures, not a replacement for it, although it is transparent in terms of helping to set out the basic assessment process and 'good practice' control measures. In this respect, the approach closely reflects HSE's general risk assessment and risk management principles (HSE, 1998). It provides an illustration of the use of 'good practice' showing that, at least in the first instance, good practice enables users to go straight from hazard (i.e., expressed by R-phrases), to how people interact with the hazard (i.e., exposure potential), to the appropriate workplace controls. Accordingly, it fits well with HSE's flagship publication 5 *steps to risk assessment* (HSE, 1997b), which takes users to the benchmark of generally accepted industry standards. But again, it makes it clear that even if these standards are in place, there is always a further question for employers to consider if they need to do more.

Employers will of course need to consider safety and environmental duties. While these are outside of the scope of COSHH (and the scheme), they may in some instances dictate more stringent controls than are required to protect human health: the handling of highly flammable substances provides a good example. The guidance and control guidance sheets makes it clear that these are important considerations and cross-refers to relevant information.

So far, discussion has focused on the need to control a hazardous chemical used in the workplace. Under COSHH, priority should be given to preventing exposure and the COSHH ACoP suggests substitution as one means to achieve this. This can take the form of substitution by a less hazardous chemical, or use of the same chemical in a less hazardous form. This is not overlooked in the scheme. In working through the steps to identify the appropriate control approach, emphasis is given at appropriate points to substituting a less hazardous chemical and using it in a less dusty or volatile form.

By seeking to involve intermediaries in helping firms identify and adopt appropriate control measures, it is also important to stress that the scheme does not represent a shift in the duty to assess and control risk from user to intermediary. That said, the scheme can be used to help suppliers comply with their duties under Regulation 6 of CHIP and the Safety Data Sheet ACoP, to provide information on control as part of the Safety Data Sheet. It is important that

HSE

Control Guidance Sheet 11
Medium Scale Liquids: Drum Emptying
Control Approach 2

The guidance in this sheet is aimed at employers to help them comply with the requirements of the Control of Substances Hazardous to Health (COSHH) Regulations 1994.

This sheet is part of a wider risk management scheme developed by the HSE to control chemicals. It describes all the points that need to be addressed to use Control Approach 2 properly. It gives as an example the use of a contained transfer system to control exposure when charging a vessel from a drum.

It is important that all the points are followed.

Many toxic substances are also flammable or corrosive. Control equipment must be suitable for these hazards. Look at the safety data sheet for more information.

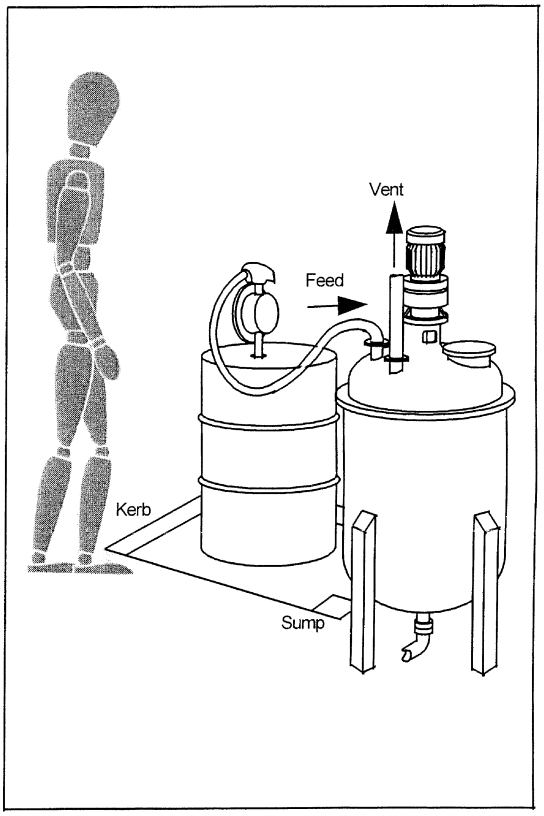
For certain processes your Local Authority or the Environment Agency will impose emission limits under the Environmental Protection Act 1990. Air cleaning equipment may therefore be necessary for some emissions to atmosphere.

Location

- ✓ Locate the transfer area away from walkways and transfer routes to reduce the chance of accidental exposure.

Design

- ✓ Ensure the work area is well ventilated
- ✓ Design the work area for ease of maintenance and, when possible, use equipment that has been designed for easy maintenance
- ✓ Provide containment around the area to catch drips and leaks
- ✓ Discharge vented vapours to a safe place away from windows and air inlets
- ✓ Ensure the pump is suitable for the liquid to be transferred. Take special care with flammable and highly flammable liquids
- ✓ Provide storage arrangements for the pump when not in use
- ✓ Consider how the barrel will be moved to the transfer area. Avoid manual handling
- ✓ Ensure the barrel and pump are earthed to prevent electrostatic sparks
- ✓ Provide a suitable "key" for removing and replacing the barrel stopper.



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Further Information

- Safety Data Sheets
- BOHS Technical Guide No.7 - Controlling Airbourne Contaminants in the Workplace. ISBN 0266-6936, ISBN 0-905927-42-7
- Control Guidance Sheets on general ventilation, filling and emptying.

Fig. 6. An example of a control guidance sheet (draft)—Control Guidance Sheet 11 Medium Scale Liquids: Drum Emptying, Control Approach 2.

Access

- ✓ Restrict access to the working area to authorised personnel

Maintenance

- ✓ Make sure all equipment is maintained as advised by the supplier or installer
- ✓ Write down special procedures such as purging or washing that are needed before the system is opened or entered

Examination and Testing

- ✓ Visually examine all equipment weekly for signs of damage
- ✓ Make sure the supplier provides information on all parameters needed to safely operate the equipment at installation
- ✓ Arrange for any extraction system to be thoroughly examined and tested at least once every 14 months
- ✓ Keep records of all examinations and tests for at least five years

Cleaning

- ✓ Thoroughly clean equipment and surfaces regularly. Once a week is recommended
- ✓ Deal with spillages immediately

Housekeeping

- ✓ Store drums and other containers in a safe place
- ✓ Put lids on containers immediately after use
- ✓ Establish procedures to safely dispose of empty bottles and drums
- ✓ No eating, drinking or smoking should be permitted in the working area

Personal Protective Equipment

- ✓ Some materials can harm the skin or cause harm by entering the body through the skin. Look at the substance safety data sheets to see if gloves, face or eye protection, protective footwear, aprons or overalls are necessary to safely handle the substances you use
- ✓ Ask your safety clothing supplier to help you select suitable protective equipment
- ✓ Respiratory protective equipment (RPE) should not be necessary for routine operations, but make sure you have considered all situations. RPE may be necessary for some cleaning and maintenance activities, e.g. clearing up large spills

Training

- ✓ Give your employees information on the harmful nature of the substances and tell them how to properly use the controls provided
- ✓ Pay particular attention to how to detect and respond to a failure in control
- ✓ Encourage your employees to use the attached check list

Employee Check List
Making the Best Use of the Control

- ❑ Make sure the ventilation system is switched on and is working
- ❑ Always remove and replace the barrel stopper using a "key".
- ❑ Always use the earth strap.
- ❑ Take considerable care when removing the pump from the barrel to minimise vapours and skin contact. Return the pump to its storage position.
- ❑ Look for signs of damage, wear or poor operation. If you find any problems, tell your supervisor. Do not carry on working if you think there is a problem.
- ❑ Wash hands before and after eating, drinking or using the lavatory.
- ❑ Do not use solvents to clean your skin
- ❑ Clear up spills straight away. For liquids - contain or absorb (with granules or mats) and dispose of safely.

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Space for standard HSE information

Fig. 6.—*continued.*

both users and intermediaries understand that their legal duties are unchanged by the scheme.

DISSEMINATION OF THE SCHEME

The fourth criterion identified by HSE as essential to an effective scheme, is that the advice should be readily accessible to SMEs. As shown by the survey of industry's perception and use of OELs, suppliers of chemicals are already key providers of information on hazard and control to SMEs, with a much wider reach than HSE guidance. In developing the UK scheme, HSE and ACTS have been keen to build on this existing route and encourage other intermediaries to get involved in its development and subsequent promotion and use. Operation of the scheme does of course rely on information that should be easily available to the chemical user and key intermediaries including TU safety representatives, trade associations, occupational health professionals, as well as suppliers. While aimed primarily at SMEs, the scheme and advice should also be of use to larger firms using chemicals.

It might be tempting to try to prescribe how intermediaries should use the scheme to help firms, but it would be difficult to anticipate the range of contacts and dialogues that exist, and any attempt might stifle otherwise co-operative and creative relationships. It is however, worth briefly considering some of the factors that we envisage would attract intermediaries to the scheme and possible ways for them to use it in practice.

Building on Responsible Care®—the chemical industry's international initiative for continuous improvement in all aspects of safety, health and environmental protection—chemical suppliers are in a potentially good position to use the scheme to help firms they supply. They will have ready information on hazard, and are likely to be able to assign dustiness or volatility to their products, although knowledge of how much chemical is used and in what operations will vary considerably between bulk commodity and specialist suppliers. However, with some increased dialogue and flexible use of the scheme, suppliers that are keen to assist customers should be able to use it to help identify control advice. As chemicals progress down the supply chain and are repackaged or reformulated, the control approach and guidance sheets needed are likely to vary. It is envisaged that the scheme can be used at all stages in the supply chain, and for some suppliers it may help them to check their own practices when handling chemicals.

Trade associations are in a similar position to suppliers in being able to offer a service, but in this case to their members. Precedence for help with control advice exists in some sectors, for example the Paintmakers Association (1992) and HSE is keen to encourage appropriate sectors and trade associations to make their members aware of the guidance and to help them use it to improve workplace control.

TU safety representatives have a very important role to play in encouraging workplace health and safety. With information available to them on local chemical usage, it is envisaged that they are also in a good position to utilise the scheme to help firms check or introduce appropriate control measures. In this respect the scheme builds on TU reps' existing work in areas where chemicals are of concern, and strong support from the TUC will help ensure the scheme is widely publicised.

The scheme may also provide a valuable tool for health and safety professionals advising firms on controlling chemicals. It can be used to complement expert knowledge, and to encourage the ownership of problems and solutions that is essential if health and safety improvements and changes in attitude are to be effective in the long term. It is also important to emphasise that the scheme is not intended to undermine the critical role of health professionals. Advice in the scheme flags up where expert help is needed, from designing and testing equipment, to the consideration of appropriate control measures for those situations where there is significant concern for human health risk (i.e., hazard Band E). As explained, for Band E substances, the scheme does not attempt to provide information on control beyond emphasising that specialist help should be sought and where it should be sought from.

Last but not least, the scheme will provide a valuable tool for both HSE and local authority inspectors in their day to day work of advising firms on the workplace control of chemicals.

All of the routes above assume dissemination of the scheme as previously described, using the control guidance sheets based on common unit operations. In deciding that unit operations provided the broadest base for the sheets, the working party recognised the potential for adding to this basic framework with sheets containing more process specific examples of controls, for example on printing. In discussing the scheme with industry sectors, HSE has been keen to encourage links to be made with existing industry control advice, and for the scheme to be used as a platform to develop more detailed sheets where there are clear industry needs. There is an important role here for HSC's industry advisory committees and trade associations, and how much the basic scheme is built on will have an important bearing on its overall dissemination.

DISCUSSION

Success criteria

The introduction to this paper set out four criteria for developing a useful and workable approach to help small firms. The first, ensuring that advice is of practical help to SMEs, is addressed by the development of a model to identify control approaches and the simple advice on using appropriate control measures. It represents an important change of approach, acknowledging that some firms do need

extra help with COSHH risk assessments and control selection, and that it can be provided on a generic basis. During consultation, this change has been warmly welcomed by all sides of industry, and the scheme is intended to make a key contribution in the chemicals area to HSC's aim of improving health and safety in small firms.

To make the scheme easy to use and understand, it has been built on readily available information such as R-phrases, simple definitions of physical properties and scale of use, and been presented in a step by step format which largely avoids technical jargon, and is in line with key HSE risk assessment and management principles. Similarly, while none of the control information is novel, careful consideration has been given to presenting it in a way that is usable by firms without much health and safety expertise or knowledge. Taking R-phrases as the basis for hazard identification in the scheme has potential drawbacks, as discussed below, but it does seek to fulfil the success criterion to make the best use of available hazard information.

Finally, in seeking to make the information readily accessible to SMEs, the scheme builds on the existing role of suppliers as key providers of advice for many firms, and extends this to include other key workplace intermediaries as discussed above. This is again a new approach on this scale, and is an important acknowledgement of the role intermediaries can play in promoting good workplace health and safety practice.

Limitations of the scheme

In attempting to develop a model that can apply to a wide range of chemicals in different use situations, there are likely to be some limitations. One limitation arises precisely from the need to be widely applicable. In developing the scheme, careful consideration was given to how to ensure the controls predicted were comparable with what would generally be considered as an acceptable level of control in different situations. This is an issue both for the acceptable exposure ranges associated with the different hazard bands at the core of the scheme, and in its practical application, for example in the subjectively based definitions for deciding the dustiness of a solid.

A scheme that is highly over-precautionary is likely to lack credibility, make intermediaries reluctant to promote it, and deter employers from actually implementing costly and inappropriate controls. Similarly, a scheme that is generally under-precautionary will fail to protect workers' health and be fundamentally self-defeating. The papers by Brooke and Maidment discuss the scheme's validation in detail, but overall it was agreed that a model that adopts a cautious approach was the most responsible direction for a generic scheme and this is the principle that has been followed.

As explained, the scheme takes for its hazard base the R-phrases assigned to chemicals by suppliers as part of their classification, labelling and packaging duties. From its R-phrases, a chemical is assigned to a hazard band that will determine the level of exposure the scheme seeks to help the employer achieve. While very large benefits arise from building on an established chemical hazard system, the working party recognised that good use of the scheme to help SMEs is dependant in the first instance on good use by suppliers of the R-phrase classification system.

The scheme and OELs

In describing the technical basis for the scheme, it can be seen that OELs are fundamental to its existence and validation. Given that the scheme rests within the COSHH framework, there is clearly no intention to undermine the role of OELs in determining the adequacy of workplace controls, although following the guidance should enable controls to be put in place that comply with OELs where they exist for substances. The development of the scheme seeks to build on the existing role of OELs, and acknowledges that an approach that is suitable for firms with dedicated health and safety expertise or the ability to buy it in, may not be appropriate for smaller firms with less expertise and resource who need simple and practical advice. In discussion on the findings of the survey of Industry's Perception and Use of OELs, the paper by Topping *et al.* also makes these points, but goes on to conclude that given the low awareness of OELs among most chemical users, it would seem sensible to restrict the list of OELs to widely used substances of concern. In considering its substance review programme with ACTS, HSE sets important store in discussing this issue further with a view to best utilising work on reviewing substances and setting limits.

Further development of the scheme

HSE is initially working on paper-based guidance and sheets for the scheme. With the increasingly widespread use of IT in industry, there is however scope for an electronic version of the scheme to be developed in due course. The step by step approach would lend itself well to an electronic package that could be accessed and used directly by firms, through the Internet, for example. It could usefully complement the role of intermediaries in promoting the scheme and help ensure wider take-up.

Other routes to reducing exposure

While it does refer to the important role of substitution in reducing workplace exposure to chemicals, the UK scheme is still primarily a tool for reducing existing exposure in the workplace. Looking more widely, there is a critical place for improved equipment design as a means to preventing or reducing exposure to chemicals at source. The mechanism is in place for machinery design standards under the EC Use of Work Equipment Directive, and these already exist in a good number of areas, although more often to reduce safety rather than health risks. To complement improved workplace control of exposure, HSE is keen

in the longer term to see improved equipment design to reduce likely exposures and to better exploit the links between equipment design and workplace control. One such initiative for publication in 1998 is a Guide to the Design and Use of Containment Equipment being prepared by the Institution of Chemical Engineers.

CONCLUSION

The intention of this paper was to provide an introduction to the new UK scheme to help small firms control health risks from chemicals, particularly its rationale, its relationship to the current legal framework and proposals for disseminating the control advice. For a fuller picture of the core model underlying the scheme and its validation, it is important to refer to the accompanying papers by Maidment (1998) and Brooke (1998).

Following wide consultation in 1998 on the guidance and the control guidance sheets, plus peer review of the core model, HSE plans to launch the scheme in Spring 1999. Obviously its success—the impact on improved control and compliance with COSHH among SMEs—can only be judged through its operation. HSE will therefore want to evaluate the scheme in practice, publish its findings, and revise the guidance as necessary. Further reviews and changes will be necessary over time to take account of changing practices and issues, for example new R-phrases introduced under CHIP.

Acknowledgements—HSE is very grateful to members of the ACTS working party who have provided their time, expertise and support to help develop the scheme. We are also grateful for the support received from all sides of ACTS (employer and worker representatives, and independent experts), the British Occupational Hygiene Society, the British Institute of Occupational Hygienists, and the many industry sectors who have been keen to contribute to the scheme's evolution. Members of the ACTS Working Party: Dr Alastair Hay, University of Leeds (TUC representative); Dr Tony Fletcher, London School of Hygiene and Tropical Medicine (TUC); Dr Ian Guest, Glaxo Wellcome (CBI); Martin Newell, AgrEvo UK Ltd (CBI); Steve Bailey, Smith Kline Beecham (independent); Jim Sanderson (independent); Alan Jones, ARCO Chemical Europe Inc (independent); Chris Money, Exxon Chemical Ltd (independent).

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