



COSHH ESSENTIALS

Easy steps to control chemicals





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HSG193

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Contents

Introduction	1
Why control hazardous substances?	2
Hazardous substances covered by this guide	3
How this guide works	4
COSHH and controlling exposure	4
Factors which affect exposure	4
Control approaches to reduce exposure	4
<i>COSHH essentials</i> : identifying control approaches	5
<i>COSHH essentials</i> : control guidance sheets	6
Workforce involvement	6
The <i>COSHH essentials</i> easy steps and worked example: 1	7
Checklist	7
STEP 1 Getting started	8
STEP 2 Factors that decide your control approach	9
STEP 3 Find the control approach	14
STEP 4 Find the task-specific control guidance sheet(s)	16
STEP 5 Implement action and review	17
Worked example: 2	20
Who else can use this guide and how?	22
Further reading and advice	24
Acknowledgements	26
Checklist (reference copy)	27

Introduction

This guide has been developed by a working group of the Health and Safety Commission's Advisory Committee on Toxic Substances, to help employers minimise the health risks arising from the use of hazardous substances at work. It can help employers to prevent or control exposure, and to meet their duties under the Control of Substances Hazardous to Health Regulations 1999 (COSHH).

COSHH essentials: easy steps to control chemicals comes in a loose-leaf binder, and consists of three main elements:

- This booklet, which provides a step by step process for identifying the right controls to reduce exposure for many hazardous substances.
- An index of the control guidance sheets.
- Control guidance sheets, which describe how to apply the control.

The binder also includes two leaflets which introduce key regulations *COSHH: a brief guide to the Regulations* and *The complete idiot's guide to CHIP*.

There are plans to develop additional control guidance sheets in the COSHH essentials series. To receive information on these sheets, please complete and return the enclosed registration sheet.

CBI



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Why control hazardous substances?

Hazardous substances used in your workplace can harm employees' health if exposures aren't properly controlled.

If an employer fails to prevent exposure or to properly control any exposure that does occur, there are a number of consequences:

- it adds to the unnecessary and preventable burden of ill health (see below);
- it is an offence under the Control of Substances Hazardous to Health Regulations 1999 (COSHH);
- business performance can be damaged through lost time for sick leave and through product waste; and
- there can be civil claims for damages.

COSHH essentials can help you control exposure and meet your legal duties. It addresses some of the basic requirements of COSHH for some hazardous substances in a simple and practical way. It also flags up other things that you need to tackle. An overview of the Regulations is given in the HSE leaflet *COSHH: a brief guide to the Regulations*.

The guide talks about 'you' as if you are an employer with duties under COSHH. But you will also find it helpful if you are a chemical supplier, a safety representative, a trade association, or a health and safety professional. Some ideas on how you can use the guide are given on pages 22-23.

Although only the courts can give an authoritative interpretation of the law, in considering the application of COSHH and this guide to people working under your direction, you should consider the following.

If you have people working under your control and direction who are treated as self-employed for tax and NI purposes, they are nevertheless

treated as your employees for health and safety purposes. You may therefore need to take appropriate action to protect them. If you are in doubt about who is responsible for the health and safety of a person working for you this could be clarified and included in the terms of the contract. However, remember, you cannot pass on a legal duty that falls to you under the Health and Safety at Work etc Act (HSW Act) by means of a contract and you will still retain duties towards others by virtue of section 3 of the HSW Act. If you intend to employ such workers on the basis that you are not responsible for their health and safety, you should seek legal advice before doing so.

Ill health caused by hazardous substances at work

There are an estimated 3000 to 12 000 occupational cancer deaths every year, mostly related to exposure to hazardous substances.

In addition, the 1995 self-reported work-related ill health survey highlighted:

- 200 000 cases of lower respiratory disease;**
- 66 000 cases of skin disease; and**
- 19 000 cases of pneumoconiosis.**

Hazardous substances covered by this guide

COSHH applies to a wide range of hazardous substances.

This guide applies to hazardous substances and preparations that are supplied for use at work. They are referred to here as chemicals. In practice, they are solids or liquids that you buy in for use, whether you run a woodworking shop, a print shop, motor vehicle repairs, an engineering workshop or a chemical firm. Typical examples include powder coatings, degreasing solvents and cleaning products, varnishes, inks and paints, and chemicals for making into other products.

Chemicals will generally be covered by the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (CHIP), and should come with a warning label and a safety data sheet.

The guide *doesn't* generally apply to the following types of hazardous substances, though they are covered by COSHH:

- hazards arising from work activity (eg wood dusts, solder and welding fume), although many of the solutions described in *COSHH essentials* can successfully control these problems;
- chemicals not covered by CHIP (eg pesticides and veterinary medicines), although again some of the solutions described here may be appropriate for these chemicals;
- naturally occurring hazards, eg grain dust; and
- biological agents.

And it doesn't apply to:

- lead and asbestos, which have their own regulations; or
- the safety and environmental effects of hazardous substances.

The further reading list on page 24 tells you where to get more information on these hazards.

How this guide works

COSHH and controlling exposure

Your duties under COSHH include carrying out a risk assessment to help you decide what you need to do to comply with the Regulations, and prevent your employees being exposed to hazardous substances used at work. The general COSHH Approved Code of Practice (ACOP) suggests you prevent exposure by:

- changing the way you work so the task that causes exposure isn't needed any more;
- modifying your process to cut out any hazardous by-product or waste; or
- substituting a hazardous substance with a new substance, or the same substance in a different form, so there is either no risk or less risk to health. HSE's guidance *7 steps*

to successful substitution of hazardous substances explains how to do this, and some advice is provided later in this guide.

If you can't prevent exposure to a hazardous substance, COSHH requires you to adequately control it. That means you have to reduce exposure to a level that won't harm people's health. As part of your risk assessment, this guide can help you identify and implement actions to adequately control exposure to chemicals. If you have already carried out a risk assessment, the guide can help you review it, and check you have the right controls in place and that they work properly.

Factors which affect exposure

There are two main factors that affect whether your employees' health is likely to be harmed, and these can help you to identify adequate controls. The factors are:

- the type of damage the chemical causes and the amount needed to cause it;
- how much of the chemical is likely to get into

the air around your employees and be breathed in, or come into contact with their skin or eyes. This in turn depends on the amount being used, and its dustiness or volatility.

COSHH essentials uses these factors to identify adequate controls.

Control approaches to reduce exposure

COSHH essentials recommends four groups of controls, called control approaches, which are explained on the next page. Each control approach covers a range of actions that work together to reduce exposure:

- good plant and equipment design;

- regular housekeeping and cleaning;
- regular maintenance, examination and testing of equipment;
- employee training and supervision; and
- in some cases, using personal protective equipment.

COSHH essentials: identifying control approaches

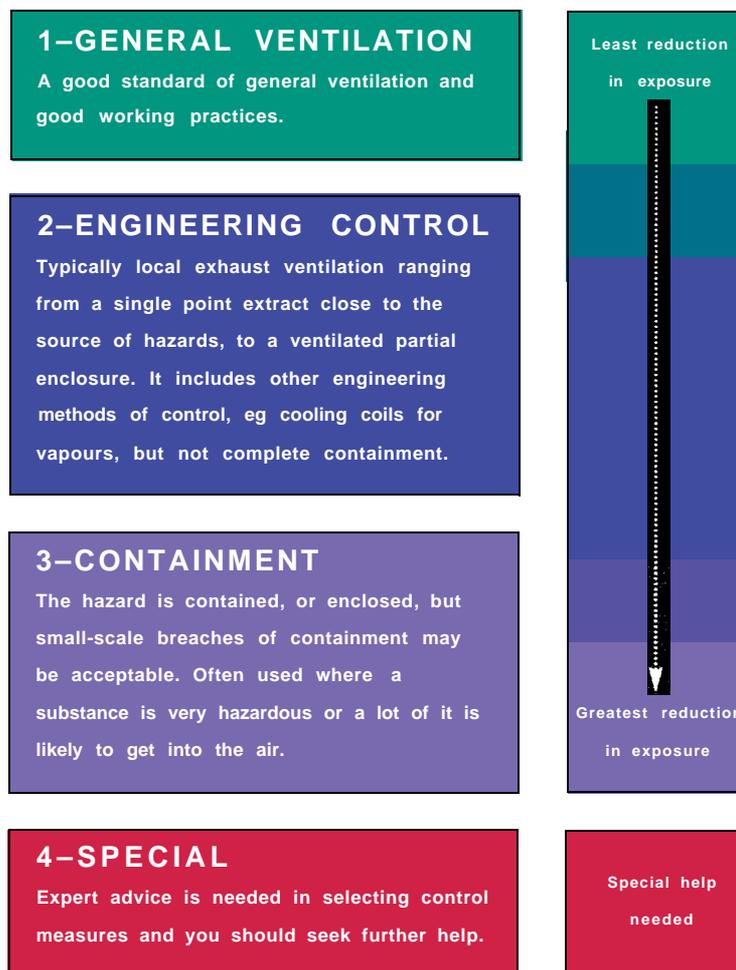
The checklist on page 7 shows how this guide works in practice. A black and white copy of the checklist is provided at the end of this booklet. You can photocopy it to use in your own workplace, as you will need a checklist for each chemical you assess.

The following pages take you through the *COSHH essentials* easy steps to find control approaches for the chemicals in your workplace. This helps you to select the right control guidance sheets on putting the approaches into practice. The steps include a worked example, which helps to illustrate the approach taken by *COSHH essentials*. A second worked example on

page 20 helps to reinforce the main points of this step by step approach.

In many cases, it will be enough to follow this guide and the good practice set out in the relevant sheet(s). But, as part of your risk assessment, you should ask yourself if you need to do more, for example consider the need for health surveillance and the monitoring of exposure levels. Do you need to take account of particular groups of people such as contractors, trainees or pregnant women? You should also consider safety and environmental hazards. These points are covered in the final step and the further reading list.

The four control approaches are:



COSHH essentials: control guidance sheets

The control guidance sheets are arranged according to the control approach they cover.

There are:

- general sheets that tell you how to use each control approach;
- more detailed sheets that give examples of good practice controls for common tasks such as mixing, weighing and sieving; and
- additional sheets on avoiding skin and eye

contact with chemicals, and on selecting and using personal protective equipment.

You won't need all of the sheets, so it is important to follow the steps in the following pages to find the right ones. If you just guess, you may not pick a sheet that will give adequate control.

Workforce involvement

Try to involve your employees or their safety representative with your risk assessment. They are in a good position to know what happens in practice, and they are the ones who will

need to use any controls you introduce. You could do this as part of the training and information you must provide under COSHH see the final step on page 17.

The COSHH essentials easy steps and worked example: 1



COSHH ESSENTIALS Easy steps to control chemicals – checklist

STEP 1 Getting started

Company name	Date
Substance name	
Supplied by	
Task(s)	

STEP 2 Factors that decide your control approach

<p>STEP 2 A</p> <p>What is the health hazard?</p> <p>Health hazard group:</p> <p>A <input type="checkbox"/></p> <p>B <input type="checkbox"/></p> <p>C <input type="checkbox"/></p> <p>D <input type="checkbox"/></p> <p>E <input type="checkbox"/></p> <p>S <input type="checkbox"/></p>	<p>STEP 2 B</p> <p>How much is being used?</p> <p>Amount used:</p> <p>Small <input type="checkbox"/></p> <p>Medium <input type="checkbox"/></p> <p>Large <input type="checkbox"/></p>	<p>STEP 2 C</p> <p>How dusty or volatile is the chemical?</p> <table border="0"> <tr> <td>Dustiness of solid</td> <td>or</td> <td>Volatility of liquid</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Low</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td>Medium</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td>High</td> <td><input type="checkbox"/></td> </tr> </table>	Dustiness of solid	or	Volatility of liquid	<input type="checkbox"/>	Low	<input type="checkbox"/>	<input type="checkbox"/>	Medium	<input type="checkbox"/>	<input type="checkbox"/>	High	<input type="checkbox"/>
Dustiness of solid	or	Volatility of liquid												
<input type="checkbox"/>	Low	<input type="checkbox"/>												
<input type="checkbox"/>	Medium	<input type="checkbox"/>												
<input type="checkbox"/>	High	<input type="checkbox"/>												

STEP 3 Find the control approach

Control approach needed:		CGS
General ventilation	<input type="checkbox"/>	100
Engineering control	<input type="checkbox"/>	200
Containment	<input type="checkbox"/>	300
Special	<input type="checkbox"/>	400
<hr/>		
In addition, for chemicals in group S		
Protecting skin and eyes	<input type="checkbox"/>	S100
Selecting and using personal protective equipment	<input type="checkbox"/>	S101

STEP 4 Find the task-specific control guidance sheet(s)

Task specific control guidance sheet(s) identified: No(s)

STEP 5 Implement action and review

5A	Assess other chemicals and tasks	<input type="checkbox"/>
5B	Plan implementation	<input type="checkbox"/>
5C	Consider safety and environmental hazards	<input type="checkbox"/>
5D	Consider other aspects of COSHH	<input type="checkbox"/>
5E	Implement action	<input type="checkbox"/>
5F	Review your assessment	<input type="checkbox"/>

STEP 1

Getting started

Action

Find the safety data sheet for each chemical you use. If you can't find it, or you think it has been updated, ring your supplier and ask them to send you another copy.

Photocopy the checklist from the end of the booklet. You need a separate copy for each chemical you assess.

Record in the STEP 1 box:

- the date of your assessment;
- the name of the chemical you are assessing;
- who supplies it; and
- what task(s) you use it for. (The specific control guidance sheets cover mixing, weighing, transfer, storage, separation, surface coating, lamination, dipping, drying and pelletising, so it may be helpful to think in these terms.)

TOUGH LACQUER CO Step 1

The Tough Lacquer Company complete Step 1 on the checklist:

STEP 1 Getting started

Company name	<i>Tough Lacquer Co</i>	Date	<i>9/6/98</i>
Substance name	<i>Citox</i>		
Supplied by	<i>Roundages Chemicals Ltd</i>		
Tasks(s)	<i>Transfer: mixing</i>		

Worked example 1

TOUGH LACQUER CO

The Tough Lacquer Co manufacture lacquers. They buy liquid citox from their supplier in drums. They transfer it from the drum, in a batch process, to a reactor containing resins where it gets mixed to make lacquers.

Extracts from the supplier's safety data sheet for citox are given below. The information is needed for the assessment. Not all safety data sheets look alike, but they should all use the same headings.

Roundages Chemicals Ltd

20 February 1998

Safety data sheet: Citox

1 Identification of preparation and company

Chemical name: Citox

Applications: Lacquer additive

Supplier: Roundages Chemicals Ltd, King Street, Casterbridge WX1 2YZ

Emergency tel: (0123) 456 789

2 Composition/information on ingredients

Ingredient name: Citox

Content: 100%

Health c/ass: Xn, Xi

Risk (R No): R10, R21/22-36/37/38

3 Hazard identification

Flammable; harmful in contact with the skin and if swallowed; irritating to the eyes, respiratory system and skin

9 Physical and chemical properties

Physical state: Liquid at normal temperatures

Boiling point: 134 °C

Flashpoint: 36 °C

Flammability limits: 2.3-6.6%

STEP 2

Factors that decide your control approach

There are three factors to address in this step:

STEP 2A

the possible health effects from exposure to the chemical - its health hazard;

STEP 2B

the amount in use; and

STEP 2C

its dustiness or volatility.

You should be able to find all the information you need fairly easily from: the chemical's safety data sheet; your knowledge of the chemical and the task; and the information in the next few pages.

STEP 2A

What is the health hazard?

Under the CHIP Regulations there are a series of codes that indicate the hazardous properties of a chemical. They are called risk phrases (or R-phrases). By law, suppliers have to state all the relevant R-phrases on a chemical's safety data sheet. This is to help you make sure the chemical is properly handled and controlled in your workplace.

Many R-phrases refer to health effects on humans, for example R37 means the chemical is irritating to the respiratory system. But some describe the damage the chemical can cause to the environment, and others describe safety hazards, for example R14 means it reacts violently with water.

This guide uses the common R-phrases that indicate harm to human health. They are grouped together in the table on page 11, broadly in line with the seriousness of their effects. To complete this step, you need to decide which group(s) your chemical belongs to.

■ Chemicals that can get into the air and cause harm when breathed in are covered in groups A to E. The most hazardous are generally in group E, for example those causing cancer (shown by 'Carc' in the R-phrase), or mutation of the cells (shown by 'Muta'). The least hazardous are in Group A, and might for example cause temporary irritation.

■ Group S includes substances that can cause damage if they come into contact with the skin or eyes.

■ Some substances can cause harm both when breathed in and when they come into contact with skin and eyes.

Action

Check the R-phrases from your safety data sheet against those in the table opposite to decide which hazard group(s) your chemical belongs in. Decide on one group from hazard groups A to E, and be careful to match the R-phrases exactly. Some R-phrases can appear alone or in combination with others. This is indicated by a / between the numbers, eg R21/22 means that both R21 and R22 apply to the chemical. In addition check group S, to see if contact with skin and eyes is also a hazard.

Tick the corresponding box(es) at **STEP 2A** on the checklist.

If you have ticked:

- group A, B, C or D, go to **STEP 2B**
- group E, skip Steps 2B and 2C and go straight to **STEP 3**

STEP 3 will tell you what to do if you have ticked group S as well.

If there are a number of R-phrases on the safety data sheet which appear in different hazard groups from A to E, always tick the higher group. For example, for a chemical with R21/22 (group B) and R45 (group E), tick group E.

Some R-phrases start with the phrase Carc cat, Muta cat or Repr cat. Don't worry about this first part of the R-phrase: apart from chemicals marked R40, it won't affect the hazard grouping. Be careful to note that a chemical marked Carc cat 3 R40 belongs in group D, and one marked Muta cat 3 R40 belongs in group E.

If you can't find the R-phrases on the safety data sheet, or are uncertain which is the right hazard group, contact your supplier for advice.

Sometimes your supplier may say on the safety data sheet which hazard group(s) the chemical belongs to. If you're not sure that the grouping relates to *COSHH essentials*, ring them and check.

One important way to reduce risk is by using a less hazardous chemical. You may want to consider substituting the chemical you use for one that belongs in a less hazardous group. Again, your supplier should be able to help.

TOUGH LACQUER CO Step 2A

The Tough Lacquer Co see from the safety data sheet that citox is given the R-phrase R21/22-36/37/38 - harmful in contact with skin and if swallowed, and irritating to the eyes, respiratory system and skin.

From the table, they find R36/37/38 is in groups C and S and R21/22 in groups B and S. So they tick the higher hazard group - group C, and also group S on the checklist at Step 2A. The firm also note R10 - flammable, and that they need to consider safety measures to protect against fire as well.

STEP 2 A	
What is the health hazard?	
Health hazard group:	
A	<input type="checkbox"/>
B	<input type="checkbox"/>
C	<input checked="" type="checkbox"/>
D	<input type="checkbox"/>
E	<input type="checkbox"/>
S	<input checked="" type="checkbox"/>

STEP 2B

How much is being used?

Action

Decide if the amount of chemical you use per operation or batch can be described as:

- *small* - grams or millilitres;
- *medium* - kilograms or litres; or
- *large* - tonnes or cubic metres.

If in doubt about the amount, opt for the larger quantity.

Remember the amount of chemical you use affects your employee's exposure. The less you use the better, both for their health and your budget.

Tick the corresponding box in **STEP 2B** of the checklist and go to **STEP 2C**

TOUGH LACQUER CO Step 2B

For each batch, the Tough Lacquer Co add 50 to 100 litres of citox to the reactor over a two-hour period. So they tick medium on the checklist at Step 2B.

STEP 2B	
How much is being used?	
Amount used:	
Small	<input type="checkbox"/>
Medium	<input checked="" type="checkbox"/>
Large	<input type="checkbox"/>

STEP 2C

How dusty or volatile is the chemical?

The physical form of a chemical affects how likely it is to get into the air, and this affects the control approach you need. For solids, the physical property is its dustiness, and for liquids, it is volatility.

Volatility describes a liquid's ability to turn into a vapour, and therefore to get into the air. Some liquids - highly volatile ones - do this more readily than others, and so create the potential for greater exposures than chemicals with lower volatility. This guide uses the boiling point of your chemical and your task or process temperature to decide volatility.

Action

Using the details on the opposite page for either solids or for liquids, decide if dustiness or volatility is high, medium or low.

One way to reduce risk is by reducing dustiness or volatility. Can you buy and use the chemical in a different form? For example, can a fine powder be replaced with pellets or less dusty granules? For liquids, can you use a lower process temperature or a chemical with a higher boiling point? (If you decide to use one with a higher boiling point, remember that it is not generally advisable to substitute it with one in a higher hazard group at Step 2A.)

Tick the relevant box in **STEP 2C** on the checklist for dustiness or volatility.

Solids - how dusty?

Low pellet-like solids that don't break up. Little dust is seen during use. *Examples:* PVC pellets, waxed flakes, prills.

Medium crystalline, granular solids. When used, dust is seen, but settles out quickly. Dust is left on surfaces after use. *Example:* soap powder.

High fine, light powders. When used, dust clouds can be seen to form and remain in the air for several minutes. *Examples:* cement, carbon black, chalk dust.

If you're in doubt about the level of dustiness, opt for the dustier description.

Liquids - how volatile?

To decide about volatility, you need to know the chemical's boiling point and your task or process temperature. The boiling point should be given on the safety data sheet - if it isn't, ring your supplier and ask.

If you are using a preparation made up of two or more substances with different boiling points, use the lowest one. Boiling point isn't the same as flashpoint. Again, if in doubt, ask your supplier.

If your task involves a range of process temperatures, use the highest one.

For tasks carried out at room temperature

Decide the volatility as follows:

- if the boiling point is below 50°C, volatility is **high**

- if the boiling point is between 50°C and 150°C, volatility is **medium**
- if the boiling point is above 150°C, volatility is **low**

For tasks carried out above room temperature

Use the chemical's boiling point and process temperature to decide volatility from the graph below. Read across from the boiling point, and up from the process temperature. The point where the two lines meet on the graph will tell you the volatility.

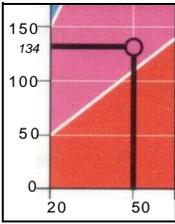
If the point falls on one of the borders that divides high from medium volatility, or medium from low, opt for the higher volatility.

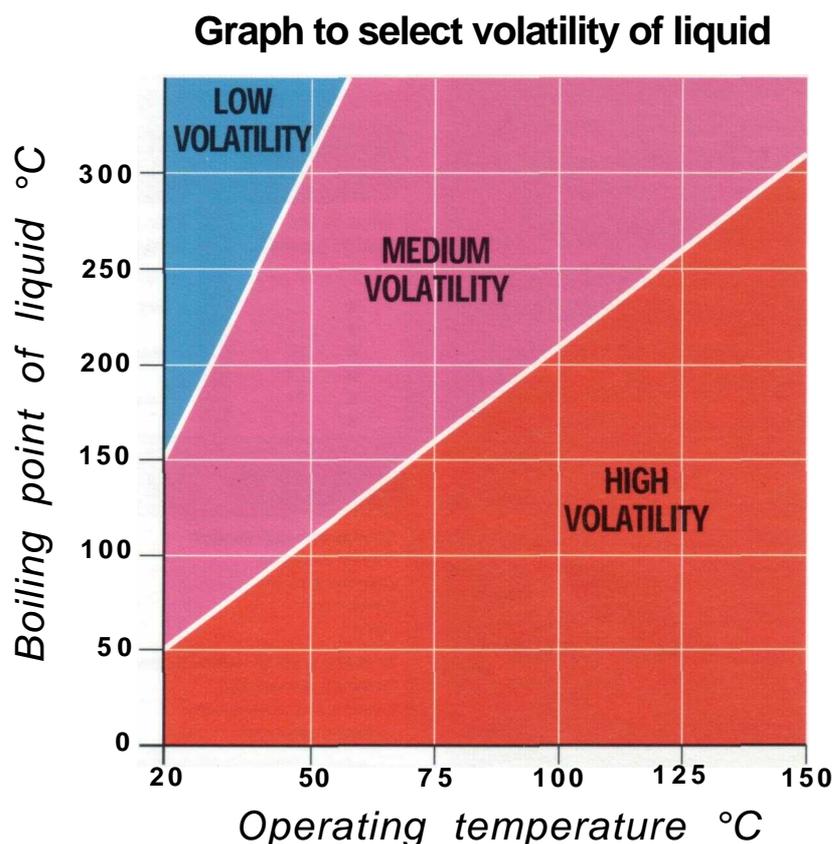
TOUGH LACQUER CO
Step 2C

The Tough Lacquer Co use citox in a reactor at 50 °C. The safety data sheet gives its boiling point as 134 °C. The two lines cross on the graph in the medium volatility section. So they tick medium volatility on the checklist at Step 2C.

STEP 2C
How dusty or volatile is the chemical?

Dustiness of solid	or	Volatility of liquid
<input type="checkbox"/> Low		<input type="checkbox"/>
<input type="checkbox"/> Medium		<input checked="" type="checkbox"/>
<input type="checkbox"/> High		<input type="checkbox"/>





STEP 3

Find the control approach

You now have enough information to identify the control approach(es) you need to adequately reduce exposure for your chemical and task.

Control approach 1	General ventilation	see sheet 100
Control approach 2	Engineering control	see sheet 200
Control approach 3	Containment	see sheet 300
Control approach 4	Special	see sheet 400

Action

The table on the opposite page shows the control approaches needed for hazard groups A to E according to how much chemical is being used, and its dustiness or volatility. With the information from STEP 2 of your

checklist, look at the table on the opposite page and find the control approach you need. From the box above, you can then select the appropriate general control guidance sheet that gives advice on the control approach.

If you also ticked hazard group S at STEP 2A, it means extra action is needed to protect employees' skin and eyes. This means you should also select control guidance sheets, S100 and S101, which give advice on protecting skin and eyes, and on selecting and using personal protective equipment (PPE).

TOUGH LACQUER CO Step 3

The Tough Lacquer Co have ticked hazard group C on the checklist and they use a medium amount of citox with medium volatility.

Using the table on the opposite page, they see that it needs control approach 3 - containment. They take a copy of the general control guidance sheet 300.

Because the firm also ticked hazard group S, they take copies of the S100 and S101 sheets with advice on protecting employees' skin and eyes, and on selecting and using personal protective equipment.

STEP 1 Getting started

Company name	<i>Tough Lacquer Co</i>	Date	<i>9/6/98</i>
Substance name	<i>Citox</i>		
Supplied by	<i>Roundages Chemicals Ltd</i>		
Task(s)	<i>Transfer; mixing</i>		

STEP 2 Factors that decide your control approach

STEP 2A	STEP 2B	STEP 2C
What is the health hazard? Health hazard group: A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> S <input checked="" type="checkbox"/>	How much is being used? Amount used: Small <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Large <input type="checkbox"/>	How dusty or volatile is the chemical? Dustiness of solid or Volatility of liquid <input type="checkbox"/> Low <input type="checkbox"/> <input type="checkbox"/> Medium <input checked="" type="checkbox"/> <input type="checkbox"/> High <input type="checkbox"/>

STEP 3 Find the control approach

Control approach needed:		CGS
General ventilation	<input type="checkbox"/>	100
Engineering control	<input type="checkbox"/>	200
Containment	<input checked="" type="checkbox"/>	300
Special	<input type="checkbox"/>	400
In addition, for chemicals in group S		
Protecting skin and eyes	<input checked="" type="checkbox"/>	S100
Selecting and using personal protective equipment	<input checked="" type="checkbox"/>	S101

Find the control approach

The number in the box represents the control approach

STEP 2B	STEP 2C			
Amount used	Low dustiness or volatility	Medium volatility	Medium dustiness	High dustiness or volatility
Hazard group A				
Small	1	1	1	1
Medium	1	1	1	2
Large	1	1	2	2
Hazard group B				
Small	1	1	1	1
Medium	1	2	2	2
Large	1	2	3	3
Hazard group C				
Small	1	2	1	2
Medium	2	3	3	3
Large	2	4	4	4
Hazard group D				
Small	2	3	2	3
Medium	3	4	4	4
Large	3	4	4	4
Hazard group E				
For all hazard group E substances, choose control approach 4				

STEP 4

Find the task-specific control guidance sheet(s)

As well as a general control guidance sheet on using each control approach, there are more detailed control guidance sheets for a range of common tasks.

The index to the control guidance sheets includes a table for each control approach to help you find further sheets for your substance and task(s).

Action

Turn to the index, and select the table for your control approach. Find the number(s) of the guidance sheets you need by using the following information from your checklist:

- the task;
- whether the substance is a solid or a liquid; and
- how much is being used in the task or batch.

Write the sheet number(s) on your checklist at **STEP 4** and find the relevant sheet(s). There aren't specific sheets for all tasks. If there isn't one for your task, the general guidance sheet you found at **STEP 3** should give you enough information to get started. Look at the further reading list on page 24 for other advice.

TOUGH LACQUER CO Step 4

Working through the guide has confirmed The Tough Lacquer Co's view that a better system is needed to control exposure to citox when transferring it from the drums to the reactor. Using the table for control approach 3 in the index, they select control guidance sheets 306 and 318.

		Solids			Liquids			
Unit operations	Sheet title							
Transfer	Transferring solids		303	303				
	Sack emptying		304					
	Drum filling					305	305	
	Drum emptying					306		
	Charging a reactor/mixer from a keg	204	204					
	IBC filling and emptying					307	308	
	Tanker filling and emptying					309	310	
	Filling kegs			311				
	Transferring liquid by pump					312	312	
	Packet filling		301	313	313			
	Bottle filling				301	314	314	
Weighing	Weighing		301	315	315	301	316	316
Mixing	Mixing		301	317	317	301	318	318

STEP 4 Find the task-specific control guidance sheet(s)

Task-specific control guidance sheet(s) identified: No(s) 306 and 318

STEP 5

Implement action and review

You have now used *COSHH essentials* to find the control approach and advice for the chemical and task(s) on your checklist. But this isn't the end!

You need to think carefully about how to put the advice into practice, and how it links to other action you might need to take. It is worth planning your implementation carefully, to save you time and money in the long run. The following steps should help. Tick the boxes on the checklist as you go through.

Finally, it is important to review your assessment - this is covered at Step 5F.

STEP 5A

Assess other chemicals and tasks

ACTION You may use a number of chemicals in a range of tasks, in

which case repeat the assessment for those chemicals and tasks as well.

STEP 5B

Plan implementation

ACTION Look at the control guidance sheet(s) you have selected, and compare them to your current practice. Before implementing any of the advice:

- Look at the range of chemicals and tasks you have, and decide how best to implement action across the board.
- Think about the suitability of the control approach you have selected for your situation. If in doubt or you need help, seek specialist advice (see page 25). Remember, having to change old working practices or spend money on new controls doesn't make the control approach unsuitable!
- Look at all aspects of the advice on the control guidance sheets. You shouldn't pick and choose individual pieces of advice; all the aspects work

together to provide adequate control. You may already have the right control in place - local exhaust ventilation, for example - but is it working? Do your employees switch it on? When was it last maintained or tested?

■ If you have selected control approach 4, make sure you seek further guidance or specialist advice on what to do. This is critical because there could be very serious health effects if exposure isn't properly controlled. Don't give up at this point!

■ If you have selected the S100 and S101 guidance sheets on protecting skin and eyes, and on selecting and using personal protective equipment, make sure you link the advice to the control approach you have selected. It isn't a replacement for control approaches 1 to 4, it is in addition.

STEP 5C

Consider safety and environmental hazards

ACTION Take account of any safety or environmental hazards - look at the other R-phrases and advice on the chemical's safety data sheet. Although not covered by COSHH,

in practice these hazards will sometimes affect the controls you need, and their implementation (see the further reading list on page 24).

STEP 5D

Consider other aspects of COSHH

ACTION Think about other actions you need to take to fully comply with COSHH. These are spelt out in the leaflet *COSHH: a brief guide to the Regulations*, but include for example:

■ Are there other hazardous substances in your workplace covered by COSHH which need assessing and control measures (see page 3)?

■ Do you need to carry out health surveillance? You can use the results to help check that your controls are working.

■ Do you need to monitor exposure levels? Under COSHH you have to measure the concentration of hazardous substances in the air breathed in by workers if your assessment

concludes that:

- there could be serious risks to health if your control measures failed or deteriorated;
- exposure limits might be exceeded. For a number of commonly used hazardous substances, the Health and Safety Commission has assigned occupational exposure limits (OELs) to help define adequate control. Generally, if you follow this guide correctly, you will achieve adequate control; or
- control measures might not be working properly.

See the further reading list for publications on exposure limits and monitoring.

■ Have you given your employees all the training and information they need?

STEP 5E

Implement action

ACTION Implement the control measures in consultation with your employees, and check

the measures work. Take any other action you have identified.

STEP 5F

Review your assessment

ACTION Make sure you review your assessment regularly. You must review it straightaway if you think it might not be valid anymore, or if there

is a significant change to your work, for example starting a new process, buying a new chemical, or taking on a new employee.

TOUGH LACQUER CO

Step 5

The Tough Lacquer Co realise the drums of citox need to be stored properly when they are delivered, other ingredients used in the reactor need to be assessed, and the final product needs to be properly stored before it is distributed. They work through COSHH essentials again and identify the appropriate control guidance sheets.

Looking at the advice on CGS 306 for transferring citox to the reactor, they see that their current system needs upgrading. Because of the flammability hazard, a contained system would also reduce the

risk of fire. They use the advice to help purchase a suitable drum pump and specify that it is for use with a flammable substance. The pump is installed. The firm trains its staff on how and why to use the pump, and puts the employee checklist from the back of the control guidance sheet on the wall for employees to use, alongside the fire precaution advice.

The firm also improves its storage facilities in line with sheet 101 and makes sure staff know the procedures. Suitable PPE is bought for staff to use to protect their skin

in line with sheet S101, and they are trained on how to use it.

The firm decides to formally review working practices in a month to make sure they are being carried out properly, and puts a note in the diary to have the reactor thoroughly examined and tested during the annual shutdown.



COSHH ESSENTIALS
Easy steps to control chemical – *checklist*

STEP 1 Getting started

Company name <u>Tough Lacquer Co</u>	Date <u>9/6/98</u>
Substance name <u>Citox</u>	
Supplied by <u>Roundages Chemicals Ltd</u>	
Task(s) <u>Transfer: mixing</u>	

STEP 2 Factors that decide your control approach

STEP 2A What is the health hazard?

Health hazard group:

A

B

C

D

E

S

STEP 2B How much is being used?

Amount used:

Small

Medium

Large

STEP 2C How dusty or volatile is the chemical?

Dustiness of solid	or	Volatility of liquid
<input type="checkbox"/>		Low <input type="checkbox"/>
<input type="checkbox"/>		Medium <input checked="" type="checkbox"/>
<input type="checkbox"/>		High <input type="checkbox"/>

STEP 3 Find the control approach

Control approach needed:		CGS
General ventilation	<input type="checkbox"/>	100
Engineering control	<input type="checkbox"/>	200
Containment	<input checked="" type="checkbox"/>	300
Social	<input type="checkbox"/>	400
In addition, for chemicals in group S		
Protecting skin and eyes	<input checked="" type="checkbox"/>	S100
Selecting and using personal protection equipment	<input checked="" type="checkbox"/>	S101

STEP 4 Find the task-specific control guidance sheet(s)

Task specific control guidance sheet(s) identified: No(s) <u>306 and 318</u>
--

STEP 5 Implement action and review

5 A Assess other chemicals and tasks	<input checked="" type="checkbox"/>
5 B Plan implementation	<input checked="" type="checkbox"/>
5 C Consider safety and environmental hazards	<input checked="" type="checkbox"/>
5 D Consider other aspects of COSHH	<input checked="" type="checkbox"/>
5 E Implement action	<input checked="" type="checkbox"/>
5 F Review your assessment	<input type="checkbox"/>

Worked example 2

This second worked example illustrates the key points in the *COSHH essentials* step by step approach. This time, the chemical is a dusty solid which has to be weighed out before it can be used as a pigment in printing inks.

In addition to taking you through the individual steps, the worked example emphasises the

importance of obtaining a safety data sheet for each chemical you use. You need the safety data sheet to find the hazard group from the R-phrase given on the sheet. It is also essential for providing you with most of the chemical's properties, eg physical state, boiling point. Chemical safety data sheets may not contain information on a chemical's dustiness.

STEP 1

Getting started

Glocolor Printing Co buys colbium from Binge Chemicals for use as a pigment in printing inks. It is weighed out into smaller bags before mixing. Their safety manager, Bev Reddish, cannot find

the safety data sheet that should have been supplied with the last batch of colbium. Bev phones Binge Chemicals who fax across another copy. Bev completes **STEP 1** on the checklist.

STEP 2

Factors that decide your control approach

Bev sees from the safety data sheet that colbium has the R-phrase R20 (harmful by inhalation). Using the table on page 11, Bev ticks hazard group B on the checklist.

Colbium is supplied in 20 Kg kegs, and Glocolor Printing Co weigh it into 2 Kg bags for subsequent addition to the inks. **STEP 2B** tells Bev this is medium-scale use, so this is marked on the checklist.

Bev knows from experience, and from talking to the trade union safety representative, that colbium is a fine powder - dust clouds form when it is weighed out. Using the information in **STEP 2C** Bev ticks 'high' for dustiness. Bev considers the question in **STEP 2C** about using a less dusty form, but knows that it has to be a fine powder to disperse effectively in the ink.

STEP 3

Find the control approach

Using the information from **STEP 2** and the table on page 15, Bev finds that control

approach 2 is needed. Bev selects control guidance sheet 200.

STEP 4

Find the task-specific control guidance sheet

Bev turns to the index to see if there are sheets on weighing and mixing. The control approach 2 table indicates there are - numbers

214 and 217. Bev writes the numbers on the checklist, finds the sheets and photocopies them.

STEP 5

Implement action and review

Bev now repeats the assessments for the other components of printing inks in use at Glocolor Printing Co. Bev also considers their storage and transfer, and selects the appropriate control guidance sheets.

Bev knows the workshop has an enclosed weighing bench similar to that recommended in CGS 214, but thinks the extractor is probably due for maintenance and testing. An arrangement is made for an engineer to come in and do this, and Bev makes a note of when it will next need testing. Bev reminds operatives to use the extractor, and to report any problems straightaway. They are given a copy of the employee checklist from the sheet to follow, having been told first what they have to do and why.

Bev checks to make sure that Glocolor Printing Co is taking the right measures for its other tasks, having taken account of advice on safety and environmental considerations from the chemical safety data sheets. Looking at the other requirements of COSHH outlined in the leaflet *COSHH: a briefguide to the Regulations*, Bev is not sure if the firm needs

to carry out health surveillance or monitoring under COSHH and rings the trade association for advice. Having implemented the actions, Bev makes a note to review the assessment in a month to make sure everything is working.

		COSHH ESSENTIALS Easy steps to control chemical – <i>checklist</i>																								
STEP 1 Getting started																										
<table border="1" style="width: 100%;"><tr><td>Company name</td><td><u>Tough Lacquer Co</u></td><td>Date</td><td><u>9/6/98</u></td></tr><tr><td>Substance name</td><td colspan="3"><u>Citox</u></td></tr><tr><td>Supplied by</td><td colspan="3"><u>Roundages Chemicals Ltd</u></td></tr><tr><td>Task(s)</td><td colspan="3"><u>Transfer, mixing</u></td></tr></table>			Company name	<u>Tough Lacquer Co</u>	Date	<u>9/6/98</u>	Substance name	<u>Citox</u>			Supplied by	<u>Roundages Chemicals Ltd</u>			Task(s)	<u>Transfer, mixing</u>										
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Who else can use this guide and how?

Although this guide is aimed mainly at employers who have a legal duty to comply with COSHH, it will also be useful to others who are involved in or affected by the use of chemicals at work. This includes chemical suppliers, safety representatives, trade associations, and health and safety professionals.

HSE knows that not all firms are aware of COSHH or are complying with its requirements. Part of the Health and Safety Executive's role is to provide information and help make sure employers do comply, but we recognise that we won't reach all firms.

Suppliers

Suppliers of hazardous substances for use at work are in a key position to help employers.

Under the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (CHIP), you have a duty to provide a safety data sheet (SDS) with any chemicals or preparation that you classify as dangerous for supply. A safety data sheet must give certain information so the recipient can take the right action to protect workplace health and safety, and the environment. The information includes the hazardous properties of the substance (eg appropriate R-phrases), information on handling and storage, exposure controls and personal protection.

Whether or not an employer uses *COSHH essentials*, it is important that you accurately classify hazards and provide clear safety data sheets to help them achieve good workplace control.

In addition to complying with CHIP, there are a range of ways that suppliers can use

Others with an interest in health and safety are sometimes in a good position to help firms with their assessments or to pass on information.

Suppliers, for example, have legal duties to provide information under CHIP, and safety representatives are in a good position to know what's causing problems and how controls work in practice.

If you fall into one of these groups, HSE is keen to work in partnership with you to improve workplace health and safety. The following pages give some ideas of how you might use *COSHH essentials*. If you are an employer reading this, it may give you further ideas of who you might turn to for advice.

COSHH essentials to help firms identify the controls they need to protect health. Some suggestions are given here, although you may have other ideas:

- tell firms about *COSHH essentials*;
- look at the hazard groups in Step 2 and allocate the chemicals you supply to their relevant groups. You might include this information on your safety data sheets with a brief reference to the guide;
- help firms work through this *COSHH essentials* checklist;
- help firms reduce risks by substituting the substance for a less hazardous one, or by supplying it in a less hazardous form - as in Step 2.
- help firms select the control approach and guidance sheet(s) they need to control the chemical(s) you supply;
- use *COSHH essentials* yourself to help make sure you are complying with COSHH;
- encourage other suppliers up and down the supply chain to use and recommend *COSHH essentials*.

Remember, you have a duty to comply with CHIP. Employers who use chemicals must comply with COSHH. This guide doesn't change your legal duties or make you liable for the user's risk assessment. But to effectively prevent ill health from the use of chemicals at work, suppliers and user firms need to work together.

More information on CHIP is available in these HSE publications:

- *The complete idiot's guide to CHIP* INDG181(rev1) 1999;

- *CHIP 2 for everyone* HSG126 1995 ISBN 0 7176 0857 3;
- *Safety data sheets for substances and preparations dangerous for supply. Guidance on regulation 6 of the CHIP Regulations 1994. Approved Code of Practice* L62 1995 ISBN 0 7176 0859 X;
- *Approved guide to the classification and labelling of substances and preparations dangerous for supply* CHIP 97. *Regulations and guidance* L100 1997 ISBN 0 7176 1366 6

Trade union safety representatives

Safety representatives, both trade union appointed, and non-trade union appointed, are in a unique position in the workplace to help improve standards of workplace health and safety. Whether or not your employer is aware of COSHH, you might use *COSHH essentials* in a range of ways, for example:

- raise it with the workplace safety committee;

- help work through it for the chemicals used in your workplace to identify the right controls;
- contribute to the firm's COSHH risk assessment and encourage debate to improve control measures and worker information and training;
- encourage its use to review existing COSHH assessments as necessary.

Trade associations

Trade associations can offer important services to members. These sometimes include advice on complying with health and safety legislation - certainly a very wide range of industry sectors use chemicals. If you are a trade association, ideas for using *COSHH essentials* include:

- bring it to your members' attention through your newsletter or circular, etc;
- explain how it links to any existing sector-specific guidance on hazardous substances;

- provide copies of the guide for members to help them with their risk assessments and control measures under COSHH;
- if you have a technical section or consultative services for members, encourage them to work through *COSHH essentials* with members to help find the control guidance sheets they need for their workplace;
- see if there is a need for further information for your members and develop it, for example process-specific guidance sheets.

Health and safety professionals

There are many other people who also help firms comply with health and safety legislation. These include occupational hygienists, occupational doctors and nurses, and health and safety consultants. You can use this guide

to help firms comply with COSHH. If they have already largely got to grips with it, they may need special advice on controlling other hazards under COSHH, or with other duties, for example exposure monitoring and health surveillance.

Further reading and advice

COSHH publications

The Control of Substances Hazardous to Health Regulations 1999 SI 1999/437
Stationery Office 1999 ISBN 0 11082087 8

General COSHH ACOP (Control of substances hazardous to health) and Carcinogens ACOP (Control of carcinogenic substances) and Biological agents ACOP (Control of biological agents). Control of Substances Hazardous to Health Regulations 1999. Approved Codes of Practice
L5 HSE Books 1999 ISBN 0 7176 1670 3

The technical basis for COSHH essentials: easy steps to control chemicals
HSE Books 1999 ISBN 0 7176 2434 X

Health surveillance under COSHH: guidance for employers
HSE Books 1995 ISBN 0 7176 0491 8

COSHH: a brief guide to the Regulations
INDG136(rev1) HSE Books 1999

Categorisation of biological agents according to hazard and categories of containment
HSE Books 1995 ISBN 0 7176 1038 1

Related publications

5 steps to risk assessment
INDG163 HSE Books 1998 ISBN 0 7176 1565 0

Monitoring strategies for toxic substances
HSG173 HSE Books 1997 ISBN 0 7176 1411 5

Biological monitoring in the workplace: a guide to its practical application to chemical exposure
HSG167 HSE Books 1997 ISBN 0 7176 1279 1

Biological monitoring in the workplace: information for employees on its application to chemical exposure
INDG245 HSE Books 1997 ISBN 0 7176 1450 6

Hazardous substances publications

Occupational exposure limits
EH40/99 HSE Books 1999 ISBN 0 7176 1660 6
(revised annually)

The complete idiot's guide to CHIP
INDG181(rev1) HSE Books 1999

Approved Supply List (4th edition). Information approved for the classification and labelling of substances and preparations dangerous for supply. Chemicals (Hazard Information and Packaging for Supply) (Amendment) Regulations 1998
L115 HSE Books 1998 ISBN 0 7176 1641 X

Approved Supply List (supplement to 4th edition). Information approved for the classification and labelling of substances and preparations dangerous for supply. Chemicals (Hazard Information and Packaging for Supply) (Amendment) Regulations 1999
HSE Books 1999 ISBN 0 7176 1683 5

7 steps to successful substitution of hazardous substances
HSG110 HSE Books 1994 ISBN 0 7176 0695 3

Maintenance, examination and testing of local exhaust ventilation
HSG54 HSE Books 1998 ISBN 0 7176 1485 9

The selection, use and maintenance of respiratory protective equipment: a practical guide
HSG53 HSE Books 1998 ISBN 0 7176 1537 5

Publications on particular risks

There is space here for only a small selection - please consult HSE for details of any other guidance produced for your industry.

Ministry of Agriculture, Fisheries and Food/Health and Safety Commission *Code of Practice for the safe use of pesticides on farms and holdings. Part III of the Food and Environment Protection Act (FEP) and the Health and Safety at Work etc. Act 1974 (HSWA)*

MAFF Publications 1998

Safe use of pesticides for non-agricultural purposes. Control of Substances Hazardous to Health Regulations 1994. Approved Code of Practice

L9 HSE Books 1995 ISBN 0 7176 0542 6

The prevention or control of legionellosis (including legionnaires' disease). Approved Code of Practice

L8 HSE Books 1995 ISBN 0 7176 0732 1

(currently being revised)

Control of substances hazardous to health in the production of pottery. The Control of Substances Hazardous to Health Regulations 1994. Approved Code of Practice

L60 HSE Books 1998 ISBN 0 7176 0849 2

Preventing asthma at work. How to control respiratory sensitisers

L55 HSE Books 1994 ISBN 0 7176 0661 9

Assessment of exposure to fume from welding and allied process

EH54 HSE Books 1990 ISBN 0 7176 0570 1

Working alone in safety

INDG73(rev) HSE Books 1998 ISBN 0 7176 1507 3

Carcinogenicity of mineral oils

EH58 HSE Books 1990 ISBN 0 11 885581 6

Health and safety in motor vehicle repair

HSG67 HSE Books 1997 ISBN 0 7176 0483 7

COSHH in agriculture

AS28 HSE Books 1997

Agricultural pesticides

AS27 HSE Books 1995

Health risks management: a guide to working with solvents

INDG272 HSE Books 1998

Working safely with solvents: a guide to safe working practices

INDG273 HSE Books 1998

While every effort has been made to ensure the accuracy of the references listed in this publication, their future availability cannot be guaranteed.

Further advice

The British Institute of Occupational Hygienists (BIOH) keep a list of qualified consultants who will be able to help. You can telephone BIOH for more information on 01332 298087.

The Environment Agency (England and Wales) has a general enquiry line on 0645 333111. For Scotland, the Public Affairs Department of the Scottish Environment Protection Agency, on 01786 457700, handles general enquiries.

For enquiries on chemical safety publications, you can contact the HSE InfoLine on 0541 545500.

Acknowledgements

The *COSHH essentials* approach and this guide were developed by a working group of the Health and Safety Commission's Advisory Committee on Toxic Substances.

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Division



STEP 1 Getting started

Company name	Date
Substance name	
Supplied by	
Task(s)	

STEP 2 Factors that decide your control approach

STEP 2A

STEP 2B

STEP 2C

What is the health hazard?

Health hazard group:

- A
- B
- C
- D
- E
- S

How much is being used?

Amount used:

- Small
- Medium
- Large

How dusty or volatile is the chemical?

Dustiness of solid or Volatility of liquid

- Low
- Medium
- High

STEP 3 Find the control approach

Control approach needed:		CGS
General ventilation	<input type="checkbox"/>	100
Engineering control	<input type="checkbox"/>	200
Containment	<input type="checkbox"/>	300
Special	<input type="checkbox"/>	400
In addition, for chemicals in group S		
Protecting skin and eyes	<input type="checkbox"/>	S100
Selecting and using personal protective equipment	<input type="checkbox"/>	S101

STEP 4 Find the task-specific control guidance sheet(s)

Task-specific control guidance sheet(s) identified: No(s)

STEP 5 Implement action and review

5A	Assess other chemicals and tasks	<input type="checkbox"/>
5B	Plan implementation	<input type="checkbox"/>
5C	Consider safety and environmental hazards	<input type="checkbox"/>
5D	Consider other aspects of COSHH	<input type="checkbox"/>
5E	Implement action	<input type="checkbox"/>
5F	Review your assessment	<input type="checkbox"/>



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or write to:
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Sheffield S3 7HQ

HSE home page on the World Wide Web:
<http://www.open.gov.uk/hse/hsehome.htm>

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