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## 1. Introduction

This code of practice has been developed to provide guidance about work with substances that are hazardous to health and identifies what is required to ensure compliance with the Control of Substances Hazardous to Health Regulations 2002 (amended) (COSHH).

The COSHH Regulations require employers to protect staff and other people against health risks that may arise from work activities involving hazardous substances.

Employers must ensure that work is not undertaken that is liable to expose any staff or other people to any hazardous substances unless a suitable and sufficient assessment of the risks created by that work has been undertaken and that suitable and sufficient control measures have been implemented to reduce that risk to the lowest level reasonably practicable.

## 2. What are substances hazardous to health?

The COSHH regulations apply to a very wide range of substances and preparations – mixtures of two or more substances – with the potential to cause harm if they are inhaled, ingested or come in contact with or are absorbed through the skin, for example,

*Solids	*Dusts	*Vapours	*Fumes	*Smoke
*Liquids	*Fibres	*Gases	*Mist	

These include individual chemical substances or preparations such as paint, cleaning materials, pesticides and insecticides.

Substances hazardous to health can occur in many forms:

- Under the European CLP Regulations 2015, chemicals may be classified as very toxic, toxic harmful, corrosive, irritant, sensitising, carcinogenic, mutagenic or toxic to reproduction;
- Dust of any kind can become a substance hazardous to health when it is present in concentrations in the air equal to or greater than 10mg/m<sup>3</sup> time weighted average over an 8hour period of inhalable dust or 4mg/m<sup>3</sup> of respirable dust, time weighted average over an 8hour period. Dust is produced by many processes, including material removal, e.g. grinding, sanding, abrasive cutting and blasting, buffing and polishing; and also in many Faculty teaching and research projects and workshops;
- Asphyxiant gases which act by reducing the oxygen content of the atmosphere are classified as hazardous substances. These include inert gases, such as nitrogen and argon, but also certain flammable gases;
- Any Biological agents which can cause harm to human health. Biological agents are any microorganism, cell culture or human endoparasite, including any that have been genetically modified, which may cause any infection, allergy toxicity or otherwise create a hazard to human health.

Schedule 2 of the regulations prohibits the use of certain substances for particular purposes – see Appendix 5

### 3. Classification and labelling chemicals

The Classification, Labeling and Packaging Regulation (CLP) align the European Union system of classification, labeling and packaging chemical substances and mixtures to a Globally Harmonised System (GHS) and came into force on 1 June 2015.

Those ordering and using hazardous chemicals will notice only the new hazard warning ‘pictograms’ on labels, as well as changes to information given in the Material Safety Data Sheets (MSDS). The old black and orange hazard symbols will no longer be relevant.

New: red / black diamonds called ‘pictograms’



Risk and Safety phrases (R and S phrases) have been replaced by Hazard and Precautionary statements:

- **Hazard statements are separated into:**  
H200s for Physical hazards  
H300s for Health hazards  
H400s for Environmental hazards
- **Precautionary statements are separated into:**  
P100s for General  
P200s for Prevention  
P300s for Response  
P400s for Storage  
P500s for Disposal

The new Hazard statements give a more comprehensive coverage of hazardous properties. The Precautionary statements are far more detailed and are allocated according to the relevant hazards:

- New health, safety and environmental classification criteria for chemicals, requiring reclassification of many chemicals

- New Material Safety Data Sheets
- A global signal word of either 'Danger' or 'Warning' to be used on chemical labels. These words will replace words such as corrosive, harmful, irritant, flammable previously used on labels.

## 4. COSHH Risk Assessments

COSHH risk assessments must address specific intended work and the principal investigator or manager of the work is responsible for ensuring the risks associated with the work are properly assessed and recorded.

Listed below are the essential steps necessary to protect human health and the environment from risks associated with hazardous substances.

- Material Safety Data Sheets (MSDS) for all hazardous chemicals and substances must be requested from the supplier at the time of purchase. The information contained in these will assist you in carrying out the risk assessment;
- Assess risks to human health and the environment arising from the use of the hazardous substances in the work;
- Responsibility of managers and principal investigators;
- COSHH risk assessments must be carried out in advance and by competent persons;
- Consult and communicate with staff and safety officers;
- COSHH risk assessments must be suitable and sufficient, and proportionate to the risks;
- Consider the hazardous substances and the work activity;
- Decide who or what might be harmed and how;
- Assess risks relating to hazardous substances;
- Decide what control measures are necessary to prevent or adequately control exposure and minimise the risks;
- Decide whether health surveillance and monitoring of exposure is required;
- Ensure there are plans and procedures to deal with emergencies.
- Ensure workers are properly informed, trained and supervised to enable them to safely and competently perform the work;
- COSHH risk assessments and other relevant records must be kept by managers and principal investigators.
- COSHH risk assessments must be reviewed and revised where they are no longer valid or where there are significant changes to activity or risks.

The COSHH Risk Assessment form and detailed guidance on completing the form can be found in Appendices 1&2.

**Useful websites:** These websites provide important and useful information on hazardous substances and chemical safety.

<http://www.hse.gov.uk/pubns/priced/l5.pdf>

<http://www.hse.gov.uk/coshh/basics.htm>

## Appendix 1 - University COSHH Assessment Form

**Northumbria University  
COSHH Risk Assessment**

A COSHH risk assessment is required for work with hazardous substances including source materials, products, known intermediates and by-products. The form should be completed electronically and approved and signed by the responsible person.

<b>Title of project or activity</b>	
<b>Principal investigator / Responsible person</b>	
<b>School</b>	
<b>Date of assessment</b>	dd/mm/yyyy
<b>Location of work</b> (Buildings and room numbers)	

### Section 1 Project or Activity

<b>1.1: Brief description of project or activity</b>

### Section 2 Hazards

<b>2.1: Hazardous substances used and generated</b>				
	Hazardous substance	Hazard Statements	Precautionary Statements	Workplace exposure limit (WEL)
Chemicals				
Carcinogens, mutagens or reproductive toxins				
Dusts or fumes				
Asphyxiants				
Other substances hazardous to health				

### Section 3 Risks

<b>3.1: Human diseases, illnesses or conditions associated with hazardous substances</b>
<b>3.2: Potential routes of exposure</b>

Inhalation <input type="checkbox"/>	Ingestion <input type="checkbox"/>	Injection <input type="checkbox"/>	Absorption <input type="checkbox"/>	Other <input type="checkbox"/>	Select all that apply	
<b>3.3: Use of hazardous substances</b>						
Small scale <input type="checkbox"/>	Medium scale <input type="checkbox"/>	Large scale <input type="checkbox"/>	Fieldwork <input type="checkbox"/>	Animals <input type="checkbox"/>	Select all that apply	
Plants <input type="checkbox"/>	Maintenance <input type="checkbox"/>	Cleaning <input type="checkbox"/>	Other <input type="checkbox"/>			
<b>3.4: Frequency of use</b>						
Daily <input type="checkbox"/>	Week <input type="checkbox"/>	Monthly <input type="checkbox"/>	Other <input type="checkbox"/>		Select one	
[						
<b>3.5: Maximum amount or concentration used</b>						
Negligible <input type="checkbox"/>	Low <input type="checkbox"/>	Medium <input type="checkbox"/>	High <input type="checkbox"/>		Select one	
<b>3.6: Potential for exposure to hazardous substances</b>						
Negligible <input type="checkbox"/>	Low <input type="checkbox"/>	Medium <input type="checkbox"/>	High <input type="checkbox"/>		Select one	
<b>3.7: Who might be at risk</b> (*Contact the University Occupational Health Service)						
Staff <input type="checkbox"/>	Students <input type="checkbox"/>	Visitors <input type="checkbox"/>	Public <input type="checkbox"/>	Young people (<18yrs) <input type="checkbox"/>	*New and expectant mothers <input type="checkbox"/>	
Other <input type="checkbox"/>						
<b>3.8: Assessment of risk to human health</b> (Prior to use of controls)						
Level of risk	Effectively zero <input type="checkbox"/>	Low <input type="checkbox"/>	Medium/low <input type="checkbox"/>	Medium <input type="checkbox"/>	High <input type="checkbox"/>	Select one
	<input type="checkbox"/>					
<b>3.9: Assessment of risk to environment</b> (Prior to use of controls)						
Level of risk	Effectively zero <input type="checkbox"/>	Low <input type="checkbox"/>	Medium/low <input type="checkbox"/>	Medium <input type="checkbox"/>	High <input type="checkbox"/>	Select one
	<input type="checkbox"/>					

#### Section 4 Controls to Reduce Risks as Low as Possible

<b>4.1: Containment</b>					
Laboratory box <input type="checkbox"/>	Room <input type="checkbox"/>	Controlled area <input type="checkbox"/>	Total containment <input type="checkbox"/>	Glove <input type="checkbox"/>	Select all that apply
Fume cupboard <input type="checkbox"/>	Local exhaust ventilation (LEV) <input type="checkbox"/>	Access control <input type="checkbox"/>	Other <input type="checkbox"/>		
<b>4.2: Other controls</b>					

<b>4.3: Storage of hazardous substances</b>	
<b>4.4: Transport of hazardous substances</b>	
<b>4.5: Personal protective equipment (PPE)</b>	
Lab coat <input type="checkbox"/> Overalls <input type="checkbox"/> Chemical suit <input type="checkbox"/> Disposable clothing <input type="checkbox"/> Apron <input type="checkbox"/> Spectacles <input type="checkbox"/> Goggles <input type="checkbox"/> Face shield <input type="checkbox"/> Gloves <input type="checkbox"/> Special headwear <input type="checkbox"/> Special footwear <input type="checkbox"/> Other <input type="checkbox"/>	Select all that apply
[ENTER DETAILS HERE]	
<b>4.6: Respiratory protective equipment (RPE)</b>	
Disposable mask <input type="checkbox"/> Filter mask <input type="checkbox"/> Half face respirator <input type="checkbox"/> Full face respirator <input type="checkbox"/> Powered respirator <input type="checkbox"/> Breathing apparatus <input type="checkbox"/> Other <input type="checkbox"/>	Select all that apply
<b>4.7: Waste management and disposal</b>	
Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Inorganic <input type="checkbox"/> Organic <input type="checkbox"/> Aqueous <input type="checkbox"/> Mixed <input type="checkbox"/> Other <input type="checkbox"/>	
[ENTER DETAILS HERE]	
<b>4.8: Monitoring exposure</b> (If you need advice contact the University Occupational Health Service)	
<b>4.9: Health surveillance</b> (If you need advice contact the University Occupational Health Service)	
<b>4.10: Instruction, training and supervision</b>	
Special instructions are required to safely carry out the work (If yes enter details below)	Yes <input type="checkbox"/>
Special training is required to safely carry out the work (If yes enter details below)	Yes <input type="checkbox"/>
A: Work may not be carried out without direct personal supervision (If yes enter details below)	Yes <input type="checkbox"/>
B: Work may not be started without the advice and approval of supervisor (If yes enter details below)	Yes <input type="checkbox"/>
C: Work can be carried out without direct supervision	Yes <input type="checkbox"/>
Supervisor(s)	[ENTER DETAILS HERE]

## Section 5 Emergency Procedures

<b>5.1: Emergency procedures</b>



<b>5.2: Minor spillage or release</b>					
Specify procedure					
Other actions	Evacuate and secure laboratory / area	Yes <input type="checkbox"/>			
	Inform competent person (eg principal investigator / school safety officer etc)	Yes <input type="checkbox"/>			
<b>5.3: Major spillage or release</b>					
Specify procedure					
Other actions	Evacuate building by fire alarm	Yes <input type="checkbox"/>			
	Call security and fire brigade (Ext. 3200 on campus)	Yes <input type="checkbox"/>			
	Inform competent person (eg principal investigator / school safety officer etc)	Yes <input type="checkbox"/>			
<b>5.4: Fire Precautions</b>					
Carbon dioxide <input type="checkbox"/>	Water <input type="checkbox"/>	Powder <input type="checkbox"/>	Foam <input type="checkbox"/>	Blanket <input type="checkbox"/>	Automatic fire suppression <input type="checkbox"/>
Other <input type="checkbox"/>					
<b>5.5: First aid</b>					
Wash with copious amounts of water and apply polyethylene glycol (PEG) 300 for phenol <input type="checkbox"/>					
Wash with copious amounts of water and apply calcium gluconate gel for hydrofluoric acid <input type="checkbox"/>					
Remove affected clothing and wash with copious amounts of water for skin contact <input type="checkbox"/>					
Oxygen for cyanide <input type="checkbox"/>					
Eye wash station <input type="checkbox"/>					
Emergency shower <input type="checkbox"/>					
Other <input type="checkbox"/>					
[ENTER DETAILS HERE]					
<b>5.6: Emergency contacts</b>					
Name	Position	Telephone			
	Responsible person				

## Section 6 Approval

<b>6.1: Assessor</b>		
Name	Signature	Date
<b>6.2: Responsible person</b>		
Name	Signature	Date

## Risk Estimation Matrix

Severity of harm	Likelihood of harm			
	High	Medium	Low	Negligible
<b>Severe</b>	High	High	Medium	Effectively zero
<b>Moderate</b>	High	Medium	Medium/low	Effectively zero
<b>Minor</b>	Medium/low	Low	Low	Effectively zero
<b>Negligible</b>	Effectively zero	Effectively zero	Effectively zero	Effectively zero

## Appendix 2 - Guidance to Complete COSHH Risk Assessment

### Administrative Information

In this section you need to give basic information about the project or work and who is responsible for management of the work.

### Section 1 Project or Activity

#### 1.1 Brief description of the project or activity

You should provide a brief but sufficiently detailed description of the work to enable workers, other people and non-experts to understand the exact nature of the work. You should consider all of the relevant characteristics including the harmful and environmental properties of the hazardous substances.

#### Information sources

Proper assessment of the risks from hazardous substances requires sufficient information on the hazards and risks. Useful information can be found in the following resources.

- Material Safety Data Sheets (MSDS)
- University Health and Safety Office website.  
<http://www.northumbria.ac.uk/sd/central/estates/healthandsafety/>
- Health and Safety Executive website. <http://www.hse.gov.uk/coshh/basics.htm>

### Section 2 Hazards

In this section you need to describe the hazardous substances which will be used or to which people could be exposed in the work.

#### 2.1 Hazardous substances used and generated

You should provide details of the hazardous substances. The COSHH Regulations apply to a very wide range of substances: solid, liquid, gas or vapour. They apply to individual substances or complex mixtures wherever exposure might occur whether relating to scientific research, laboratory work, field work, building maintenance or cleaning etc. The hazardous substances are classified into the following types.

- Chemicals;
- Carcinogens, mutagens or reproductive toxins;
- Dusts or fumes;
- Asphyxiants;
- Other substances hazardous to health.

Proper assessment of the risks from substances requires sufficient information on any hazardous properties. There are many sources of information used to identify the hazardous properties of substances. Material safety data sheets (MSDS) contain important information as to the health and safety hazards posed by proprietary chemicals or substances, required exposure control measures, first aid requirements, spillage containment, safe disposal requirements, etc.

It is a legal requirement that the supplier provide these at no cost. MSDS do not in themselves constitute a risk assessment, but are merely the starting reference point for such an assessment, as the MSDS only gives you information about the substance itself.

You must assess the risk from use of the substance in the actual work activity. MSDS information can be obtained from company internet websites.

There are also some very useful independent websites for obtaining MSDS information. The information should be used with caution as the generic substance may not be identical to the substance you have, and this is particularly important where a preparation or mixture of substances is concerned. In such cases you should always obtain the dedicated product MSDS from the supplier.

### **Carcinogens and mutagens**

Carcinogens are substances that can cause cancer while mutagens are substances that can cause heritable genetic damage. COSHH gives specific guidance on risk assessment of carcinogens and mutagens because of the peculiar nature of the risks associated with carcinogens and mutagens. The basic principles are no different from those for risk assessment of other hazardous substances as described elsewhere in COSHH and in this guidance, but due care should be taken to properly take into account the peculiar and insidious nature of the risk.

Detailed guidance is provided in the HSE COSHH Approved Code of Practice and Guidance.

A comprehensive list of substances defined as carcinogens or mutagens for the purposes of COSHH is in the HSE EH40 Workplace Exposure Limits. A number of known carcinogens are prohibited substances and a list of these substances is given in Schedule 2 of the COSHH Regulations.

#### **2 (a) Hazardous substances**

You should provide the names of all hazardous substances which will be used or could be generated during the activity or those substances to which people might be exposed during the work. The name of each substance should be put in the relevant box. Some substances may go into more than one box (eg it may be a dust and a carcinogen).

#### **2 (b) Hazard Statements**

You should provide the Hazard Statements for the substances. Hazard Statements are phrases assigned to a hazard class and category that describes the nature of the hazards of a hazardous substance or mixture, including, where appropriate, the degree of hazard; The definitions of Hazard Statements are given in appendix 3:

#### **2 (c) Precautionary Statements**

You should provide the Precautionary Statements for the substances. Precautionary Statements are phrases that describe recommended measure(s) to minimise or prevent adverse effects resulting from exposure to a hazardous substance or mixture due to its use or disposal; The definitions of Precautionary Statements are given in appendix 4:

## **2 (d) Workplace Exposure Limits**

A number of substances hazardous to health have been given a workplace exposure limit (WEL). A WEL is the maximum concentration limits of an airborne hazardous substance to which workers may be exposed by inhalation. The HSE guidance document EH40 Workplace Exposure Limits contains listings of all current WEL assigned to airborne hazards and should be used in conjunction with the COSHH Regulations. EH40 can be found at the links below on the HSE website.

- EH40/2007 Workplace Exposure Limits (WEL) - Table 1: List of Approved Workplace Exposure Limits
- EH40/2007 Workplace Exposure Limits (WEL) - Table 1: Supplementary Information
- EH40/2007 Workplace Exposure Limits (WEL) - Table 2: Biological Monitoring Guidance Values
- EH40/2007 Workplace Exposure Limits (WEL) - Calculation Methods

These limits are set to protect the health of workers and are averaged over a specified time period referred to as a time weighted average (TWA). Two time periods are used: long term (8 hours) and short term (15 minutes).

The long term exposure limit (LTEL) is intended to control chronic effects that require prolonged or accumulated exposure (eg lung and liver disorders), whilst the short term exposure limit (STEL) are intended to control acute effects that may be evident after only brief exposures (eg respiratory irritations and eye lacrimation).

The list also denotes whether a substance is a respiratory sensitizer, or can be absorbed through the skin. In order to comply with the COSHH Regulations the WEL must not be exceeded. A substance that has not been assigned a WEL is not necessarily harmless. Seek advice from the supplier about suitable exposure levels (ie a level that will allow exposure day after day without any harmful health effects).

## **Section 3 Risks**

In this section you need to describe the risks relating to the hazardous substances which will be used or to which people will be exposed in the work. You must consider the ways by which harm could be caused from exposure to the hazardous substances in your work. You will then need to make an assessment of the overall level of risk of harm to human health and the environment from exposure to the hazardous substances in the work to enable appropriate containment and control measures to be established.

### **3.1 Human diseases, illnesses or conditions associated with hazardous substances**

You should provide details of any human diseases, illnesses or conditions associated with exposure to the hazardous substances. For example, benzene can cause cancer and many organic solvents can cause respiratory irritation or asthma.

### **3.2 Potential routes of exposure**

You should provide details of the potential routes of exposure to the hazardous substances. The potential for hazardous substances to cause ill health will depend upon the manner in which the substance can harm the body (target organs, or systems, at risk), route of entry to the body by which the substance is hazardous (hazard route) and the route of entry which leads to exposure to the substance (exposure route).

Substances may be harmful by one or more of the following exposure routes. For example, the hazardous substance could enter by:

- Inhalation (e.g. respiratory problems, transfer into circulatory system, CNS disorders);
- Ingestion (e.g. poisoning, gastrointestinal problems);
- Injection (e.g. hypodermic needle stick, or cut by contaminated sharp, poisoning, transfer into circulatory system, CNS disorders);
- Absorption (e.g. corrosive burns, dermatitis, absorption into the body through the skin, transfer into circulatory system, CNS disorders).

### **3.3 Use of hazardous substances**

You should provide details of the use of hazardous substances or how people will be exposed to the substances. For example will the work be small, medium or large scale or will it involve fieldwork.

### **3.4 Frequency of use**

You should provide details of how often the hazardous substances will be used or the activity carried out or how often people will be exposed to the hazardous substances.

### **3.5 Maximum amount or concentration used**

You should provide details of the maximum amount or concentration of hazardous substances used or to which people will be exposed.

### **3.6 Potential for exposure to hazardous substances**

You should assume that no control measures are in place when assessing the overall potential for exposure to hazardous substances in the work. Note the scale of your proposed operation and the significant risks of harmful exposure of humans or the environment if things go wrong such as in the absence or failure of control measures or a catastrophic event.

### **3.7 Who might be at risk?**

You should provide details of who will be doing the work and if any other people will be affected by the work.

Specify which persons might be directly at risk of exposure to the hazardous substances in the work (eg staff, students) and who might be indirectly at risk (eg porters, cleaners, or maintenance workers). Could people sharing your workplace be affected by your work (eg many labs host more than one working group).

Consider whether any particular groups of people might be at increased risk or adversely affected by the work and therefore might not be able to do the work. These include new or expectant mothers, young persons under 18, disabled workers, those allergic to particular substances, and employees who may be more susceptible to some illnesses because of their individual health status. Contact Occupational Health for information on these risks.

There may also be stages in the process where other workers who are not members of your team are involved and may be affected (eg the stores person receiving the goods, the autoclave operator, those disposing of the waste). Their line managers should ensure they are trained and that their own work is assessed.

### **3.8 Assessment of risk to human health**

You need to decide on the overall level of risk of harm to human health from exposure to hazardous substances in this work. Please note that this is the level of risk without the use of controls. In the controls section you will specify the necessary control measures which are required to reduce the level of exposure to the lowest level that is reasonably practicable, and in any case to a level which is adequate to protect human health. To help you estimate the level of risk you should use the information below and the risk estimation matrix. This will give you an estimate of the potential risks to human health of the work. Select only one of the following terms: Effectively zero, Low, Medium/low, Medium or High.

### **3.9 Assessment of risk to environment**

You need to decide on the overall level of risk of harm to the environment from exposure to hazardous substances in this work. Please note that this is the level of risk without the use of controls. In the controls section you will specify the necessary control measures which are required to reduce the level of exposure to the lowest level that is reasonably practicable, and in any case to a level which is adequate to protect the environment. This will give you an estimate of the potential risks to the environment of the work. Select only one of the following terms: Effectively zero, Low, Medium/low, Medium or High.

### **Estimating the level of risk**

The risk of the activity is determined by the hazardous substance and how it's used in the work. The level of risk of harm is calculated from a combination of the likelihood and severity of harm caused in given circumstances. Risk of harm = Likelihood x Severity (Effectively zero, Low, Medium/low, Medium or High)

- Severity of harm was it to occur (severe, moderate, minor, negligible);
- Likelihood of harm occurring (high, medium, low, negligible).

In practice an estimate of the level of risk of harm can be calculated using a risk estimation matrix.

Severity of harm	Likelihood of harm			
	High	Medium	Low	Negligible
Severe	High	High	Medium	Effectively Zero
Moderate	High	Medium	Medium/low	Effectively Zero
Minor	Medium/low	Low	Low	Effectively Zero
Negligible	Effectively Zero	Effectively Zero	Effectively Zero	Effectively Zero

## Section 4 Control Measures

In this section you need to describe the control measures which will be used to protect people and the environment from exposure to the hazardous substances in the work. The COSHH Regulations require that the risk of exposure to hazardous substances is either prevented, or where this is not reasonably practicable then adequately controlled.

Control measures are actions taken or systems used to reduce the risks of exposure to hazardous substances. These include:

- Engineering controls (e.g. containment laboratories, safety cabinets and fume cupboards);
- Management controls (e.g. safe operating procedures, training, supervision);
- Personal protective equipment (e.g. lab coats, gloves, spectacles).

The purpose of the COSHH risk assessment process is to enable you to select the most suitable controls or combination of controls that are proportionate to the risk. Where practicable, harmful substances must be substituted for non-harmful or less harmful ones and only if it is not reasonably practicable to prevent exposure to substances, should employers select control measures to reduce the risk of exposure to an acceptable level.

Detailed guidance on work with hazardous substances is given in the HSE COSHH Approved Code of Practice and Guidance and HSE COSHH: A Brief Guide to the Regulations.

- HSE Control of Substances Hazardous to Health Regulations: Approved Code of Practice and Guidance
- HSE COSHH: A Brief Guide to the Regulations

Specific control measures and containment levels are required for activities with hazardous substances and these are described in the COSHH Regulations and extensive guidance is given in the HSE COSHH Approved Code of Practice and Guidance. The controls required for the hazardous substances must be specified in the COSHH risk assessment and implemented.

## Principles of Good Practice for Control of Exposure to Hazardous Substances

The COSHH Regulations specify principles of good practice for the control of exposure to substances hazardous to health which employers must follow to protect their employees. To achieve the appropriate level of control you should select and apply the appropriate control measures from those approved by the COSHH Regulations.

- a. Design and operate processes and activities to minimise emission, release and spread of substances hazardous to health;
- b. Take into account all relevant routes of exposure, inhalation, skin absorption and ingestion, when developing control measures;
- c. Control exposure by measures that are proportionate to the health risk;
- d. Choose the most effective and reliable control options which minimise the escape and spread of substances hazardous to health;
- e. Where adequate control of exposure cannot be achieved by other means, provide, in combination with other control measures, suitable personal protective equipment;
- f. Check and review regularly all elements of control measures for their continuing effectiveness;
- g. Inform and train all employees on the hazards and risks from the substances with which they work and the use of control measures developed to minimise the risks;
- h. Ensure that the introduction of control measures does not increase the overall risks to health and safety.

Specific containment and control measures are required for activities with hazardous substances and these are described in the HSE COSHH Approved Code of Practice and Guidance.

### Controls

Control measures will predominantly reflect the potential routes of exposure or release. Thus where the airborne route is the significant contributor, risk control measures to be considered would include the use of a fume cupboard (chemical) or a safety cabinet.

If the substances are hazardous through ingestion, then the main measure is likely to be through good laboratory hygiene. Finally if absorption through the skin or via a skin puncture could result in harm, some form of skin cover would be necessary, mainly through hand and face protection.

The COSHH Regulations include special provisions for preventing or adequately controlling exposure to carcinogens and mutagens. The major reasons for this are that the development of the clinical effects may take many years after first exposure, often with no early warning of adverse effects, and that cancer is frequently fatal. By their very nature there is no absolutely safe measure or amount of these substances. Broadly, the control of risks involves a systematic approach which requires the application of the most effective control measures which are reasonably practicable and the selection of risks control measures should be done using a hierarchical approach.

The most effective control measures must be used in preference to the least effective ones starting with elimination, followed by substitution, engineering controls, management controls and lastly PPE. Once you have decided that you cannot eliminate or substitute less hazardous substances, you are required to implement control measures that prevent or minimise exposure to risk. Control measures should be selected in this order of priority according to the level of risk identified in the COSHH risk assessment.



## **Elimination**

This will involve redesigning the work to remove the hazardous substance. For example, changing the process, technique or activity so that the substance is not needed or generated. If hazard elimination is not successful or practical then the next control measure is considered.

## **Substitution**

Replace the hazardous substance or material or process with a less hazardous one. For example, the use of a less toxic chemical, a less volatile or flammable solvent, a different form of the same chemical, or a non-carcinogen instead of a carcinogen. If no suitable replacement is available then the next control measure is considered.

## **Engineering controls**

Installing or using additional machinery such as local exhaust ventilation to control the risk. For example, separating the hazardous substance from workers by methods such as using fume cupboards. If this method is not effective then the next control measure is considered.

## **Administrative controls**

Administrative controls are procedures to organise and do the work safely. For example, reducing the time the worker is exposed to the hazardous substance. It could also include safe work practices, the prohibition of eating and drinking in laboratories, the provision of training and the performance of risk assessments.

The scale or frequency of the procedure or quantities used could be reduced. Only after all the previous measures have been tried and found to be ineffective in controlling the risks should personal protective equipment be considered.

## **Personal protective equipment**

This is the last control measure to be considered. If chosen, personal protective equipment (PPE) should be selected and fitted to the person who uses it. In most cases a combination of engineering controls, management controls and PPE are chosen to effectively control the risks. Where PPE is the main control method it should where practical be used in conjunction with another method of PPE and safe work practices.

General control measures should include systems and procedures for safe use, handling, storage and transport of hazardous substances, sharps, maintenance of equipment, reducing numbers of exposed persons, duration of exposure and quantities to the minimum, controlling the working environment, appropriate disinfection and decontamination, safe collection, storage and disposal of contaminated waste, displaying hazard warning signs and using appropriate hygiene measures. When deciding on the sort of control measures that you intend to use the most important requirement is that control of exposure should be achieved by the most effective means and this must not be only by the use of personal protective equipment where more effective measures can be used. In practice a combination of control measures are often used to reduce the risks of exposure to the hazardous substances. In some cases depending on the activity additional control measures may also be necessary or in other cases less stringent control measures may be applied. Once you have decided on the appropriate controls then they must be implemented and used. The controls must be used to reduce the level of exposure to the lowest level that is reasonably

practicable and at least to a level which is adequate to protect human health, safety and the environment.

Control measures which are used to prevent or control exposure to hazardous substances must be maintained, examined and tested to ensure that they are working efficiently. The control measures should be subject to detailed examination and testing include engineering controls, local exhaust ventilation (LEV), which includes fume cupboards, microbiological safety cabinets and extract ventilation for equipment, and respiratory protective equipment (RPE). The precise nature of the maintenance, examination and test and degree of competence of the tester will vary depending on the nature of the equipment.

Controls must be visually inspected periodically and maintained according to the manufacturer's instructions. LEV must be regularly maintained and thoroughly examined and tested at least once every 14 months.

Respiratory protective equipment must be thoroughly examined and tested at suitable intervals. People carrying out examinations and tests must be competent. Where equipment is simple and its operation easily checked a local examination might be sufficient. However, where more complex systems are in use an examination by an external specialist is likely to be required. This will be undertaken by Campus Services, Facilities Management Team where such systems form an integral part of a buildings fabric such as air handling systems and fume cupboards which are externally ducted to the roof of a building.

Personal protective equipment (PPE) used to protect workers should be stored, checked and cleaned in such ways as to prevent the equipment being contaminated by hazardous substances. There must be an effective fault reporting system established. The requirement to inspect and test extends to administrative controls where it may be work practices that ensure adequate control and in these circumstances such systems should be subject to regular monitoring and inspection. Suitable records of any testing and examination of controls must be kept.

#### **4.1 Containment**

You should provide details of where the work will be done and how the hazardous substances will be properly contained. It's important to consider the potential routes of exposure in deciding what sort of control measures will be required. Consider if the work can be done in a laboratory or will specialised facilities be required. Will the work require total enclosure (eg glove box, flexible film isolators or Class 3 safety cabinets), partial enclosure (eg fume cupboard, Class 1 or 2 safety cabinets), local exhaust ventilation (eg exhaust ducting from machine tools, soldering or welding operations, some laboratory equipment) or general ventilation? You should also consider whether you will need to control access to the area where the work will be done by limiting it to authorised persons only.

The fundamental purpose of local exhaust ventilation (LEV) is to capture any contamination in a stream of air and either dilute it or filter it so that it poses less of a risk to the operator and those nearby. The risk assessment process will show when and what type of LEV might be necessary. Some LEV is relatively portable and used to reduce exposure to substances such as soldering fume, or dusts or vapours of low to medium toxicity or of nuisance value that are produced from a single small source.

## **Fume cupboards**

Fume cupboards are safety devices designed to protect workers who are using hazardous chemicals. Air is sucked into the cabinet past the worker through the front of the fume cupboard. The fume cupboard is so designed that one air stream passes along the base diluting and sweeping away any dense vapour and passing under a baffle plate at the back of the cupboard. This then travels up ducting to a fan on the roof.

Another air stream sweeps out the main body of the cupboard, again diluting any vapour and then passes over the top of the baffle plate and from there to the roof. The fume cupboard protects the user against harmful substances by containing substances within the body of the unit, diluting to a safe level, removing and discharging safely above the roof where it is further dispersed into the atmosphere, and when the front sash has been pulled down to the working level it protects the user's face and eyes from any projected chemical from a vigorous event.

Fume cupboards should be selected, installed and maintained according to the British Standards. The fume cupboard is a work area and must not be used as a storage space. Large objects in the fume cupboard will disrupt the air flows which can lead to loss of containment which can in turn lead to the user being affected by the hazardous vapour. Before using a fume cupboard, ensure that the unit is switched on, there is airflow into the cabinet and there is nothing in the fume cupboard apart

from equipment and materials needed for the activity. Other pieces of equipment and hazardous chemicals that are not required should be removed.

## **Local Exhaust Ventilation**

As well as fume cupboards and microbiological safety cabinets a range of other LEV may be in use. To comply with the COSHH regulations all such equipment requires regular maintenance and periodic thorough examination and test at no more than 14 monthly intervals. As such equipment is of varied type and is often highly specialised provided by the Faculty, responsibility for the maintenance and testing of this rests with the Faculty.

Managers therefore need to identify such equipment and make appropriate arrangements for its maintenance and periodic examination.

### **4.2 Other controls**

You should provide details of any special control measures that you intend to use for this work (eg avoidance of use of sharps, hygiene measures etc).

### **4.3 Storage of hazardous substances**

You should consider at this stage the quantity you need and the facilities required to store the hazardous substances or materials. Special conditions may also be required such as ventilation and security. You should take care not to store incompatible chemicals with or in close proximity to each other.

#### **4.4 Transport of hazardous substances**

You should provide details of how you will safely transport the hazardous substances or materials. For example will the substances or materials need special packaging or multiple containment.

#### **4.5 Personal protective equipment (PPE)**

You should provide details of the personal protective equipment (PPE) which will be required to protect the body, hands, eyes, face etc (eg laboratory coats, gloves or eye protection). The risk assessment may specify that PPE is required to control exposure to a hazardous substance when it is not possible to achieve adequate control over exposure by any other means and then it should be used only in addition to other appropriate measures.

The PPE must be suitable to adequately protect against a particular hazardous substance. Consider the potential routes of exposure to the hazardous substances when deciding on appropriate PPE. All PPE must be carefully selected and properly maintained including cleaning and workers should be fully trained in its use and limitations. It is important that the PPE is used appropriately.

#### **4.6 Respiratory protective equipment (RPE)**

If necessary, you should provide details of the respiratory protective equipment (RPE) which will be required to protect the respiration (eg disposable masks, respirators or breathing apparatus). The RPE must be suitable to adequately protect against a particular hazardous substance and this is particularly important for respiratory protection. Consider the potential routes of exposure to the hazardous substances when deciding on appropriate RPE. RPE which relies on a tight-fit to the face for protection (disposable filtering dust mask, reusable half face and full face masks, and breathing apparatus) must be face-fit tested for each individual wearer. Testing must be carried out by trained competent persons.

Once face fit tested to a particular respirator (type and manufacturer) a certificate of test must be obtained and this recorded. The worker must only wear that type and manufacture of respirator on which they were tested and do not require to be retested unless their facial characteristics change significantly (eg weight loss, major dentistry). Wearers of respirators that rely on a tight fit to the face for protection must be clean shaven in the area of the respirator face seal. Facial hair, or stubble, compromises the face seal and such people must not be supplied with a tight fitting respirator as a means of exposure control. A respirator option for those with beards is a powered hood which supplies filtered air at positive pressure to the breathing zone of the wearer by a soft or hard top hood that encompasses the head.

Disposable respirators (eg dust masks) only protect against some particulate, fume and oil or water based mists (all classed as particulate) and they do not provide protection against gases or vapours. Disposable respirators or filtering face piece (FFP) masks are available in three classes P1, P2 and P3 providing differing protection factors. For protection against hazardous substances reusable half or full face respirators require to be fitted with filters suitable to protect against the particular hazard present in the work. Detailed advice on this should be sought from the respirator manufacturer. All RPE must be carefully selected to be appropriate, properly maintained and serviced including cleaning and workers should be fully trained in its use and limitations. RPE must be thoroughly examined and tested at suitable intervals.

#### **4.7 Waste management and disposal**

You should provide details of how hazardous substances will be managed and disposed of when they are no longer required. Consider the types of waste materials (eg solids, liquids, gases, organic, inorganic, mixed etc). Some substances may need to be inactivated before disposal. Use puncture proof, leak proof, sealable containers for sharps (Sharps bins). Dispose of waste safely using appropriate containers and route. Waste must be safely stored, transported and disposed. Some work may require specialised waste disposal. For chemicals it is often a false economy to save money by buying more than you need only to be faced with the problem later of disposal.

For further assistance contact the Sustainability Adviser in Campus Services.

#### **4.8 Monitoring exposure**

In some cases specialized monitoring may be required to measure personal exposure or environmental levels of certain especially harmful hazardous substances (eg allergens or certain very toxic chemicals). COSHH requires that you measure the concentration of hazardous substances in the air where the risk assessment concludes that there could be serious risks to health if control measures failed or deteriorated, workplace exposure limits might be exceeded or control measures might not be working properly.

This is not required if you can show by another method of evaluation that you are preventing or adequately controlling exposure to your employees. Special monitors can be used for continuous monitoring of levels of oxygen or carbon dioxide such as where asphyxiant gases are used or stored. Monitors must be maintained and serviced in accordance with the manufacturer's instructions and emergency procedures must be produced to ensure that everyone who may be involved knows what to do should it be activated.

Monitoring exposure is rarely required but is a complex process and must be carried out by a competent person using validated methods (eg air sampling and testing). If you have need advice contact the Health and Safety Office.

Guidance on where monitoring is required can be found in the COSHH Approved Code of Practice and Guidance.

#### **4.9 Health surveillance**

Health surveillance is required for certain occupational diseases or adverse health effects (eg cancer, allergy, asthma, dermatitis) to check that people exposed to hazardous substances are not made sick from their work (eg work with carcinogens, allergens, asthmagens or respiratory sensitizers). This is usually where there is an identifiable disease or adverse health condition related to work, valid techniques are available for detecting indications of the disease or condition, if there is a reasonable likelihood that the disease or condition will occur under the particular work, and where surveillance is likely to further the protection of health of workers. Health surveillance may involve preliminary and ongoing surveillance, questionnaires, interviews, examination, tests, monitoring or referrals.

If you need advice on whether the work requires health surveillance contact the Health and Safety Office. Guidance on where health surveillance is required can be found in the HSE COSHH Approved Code of Practice and Guidance.

#### **4.10 Instruction, training and supervision**

You should provide details of special instructions, training, and supervision that are required to do the work safely. Employers must provide workers with adequate information, instruction and training on health hazards created by exposure to hazardous substances to enable them to carry out their work safely.

This should include local rules, safe working practices, standard operating procedures and the effective application of routine and emergency control measures and procedures. Suitable information and instruction should also, where required, be provided to other persons such as contractors and visitors. It is important that information, instructions and training is appropriate to the level of risk and in a form which will be understood by those involved in the work. It is also vital to keep the information up to date, taking into account any significant changes in the type of work or the methods used.

The control measures will not be effective if those involved in the work do not know their purpose, how to use them properly or the importance of reporting faults. Records of information, instruction and training should be kept. All workers must be adequately supervised and this is especially important where highly hazardous substances, specialist facilities or equipment are concerned.

The principal investigator or manager must decide on the level of supervision required to do the work. Some work may not be carried out without direct personal supervision; some may not be started without the advice and approval of supervisor while other work can be carried out without direct supervision

### **Section 5 Emergency Procedures**

In this section you need to describe the emergency control measures and procedures which will be used to protect people and the environment from exposure to the biological agents and hazards in the work in an emergency.

#### **5.1 Emergency procedures**

You should provide details of the procedures that will be required to deal with accidents, incidents and emergencies that could cause any employee or other person to be exposed to a hazardous substance or an accidental release of hazardous substances. The manager, principal investigator and staff are responsible for ensuring that accidents and emergencies are properly dealt with since these are the experts in the hazardous substances and the work. You need to assess the potential for accidental exposure and implementing emergency procedures for your work. Emergency procedures and plans must be prepared in advance.

The primary objective of the emergency procedures is the containment of the hazardous substance and the minimisation of risks to health. You should consider all of the relevant factors which may include assessing situations, instructions, informing others of accidents, isolation of area, evacuation, seeking assistance, PPE, RPE, preventing spread of contamination or spills, decontamination of work area or laboratory, safe waste disposal, first aid treatment and medical treatment if required.

Anyone not concerned with the emergency action should be excluded from the area. Only people essential for carrying out repairs and other essential work may be permitted in the affected area

and they must be provided with appropriate personal protective equipment and any necessary equipment or plant.

Emergency and spillage procedures should also be specified in any standard operating procedures (SOP) and laboratories may require spillage kits. In addition, it is often very useful to provide important emergency procedures as bullet pointed instructions on a laminated A4 sheet which can be placed where the hazardous work is done (eg stuck on the wall above the lab bench or on a piece of equipment).

Appropriate training must be provided in the accident and emergency procedures. All staff must understand and be able to implement the emergency procedures. If an emergency occurs, procedures must be put into effect as soon as possible to minimise harm and return the situation back to normal as quickly as possible. Accidents, incidents and emergencies must be reported immediately or as soon as practicable to supervisors, safety officers or managers and using the incident report form on the Health and Safety Office website.

### **5.2 Minor spillage or release**

You should provide details of the procedure that will be used to deal with a minor spillage or release. Specify the contents of any spillage kit.

### **5.3 Major spillage or release**

You should provide details of the procedure that will be used to deal with a major spillage or release. Specify the contents of any spillage kit. Where there is a risk that an electrical ignition could cause an explosion then the building should be evacuated without sounding the alarm.

### **5.4 Fire Precautions**

You should provide details of how you would deal with a fire affecting the hazardous substances in the work. Specify the best types of firefighting methods which can be used to deal with an emergency. Further information is available from the Fire Safety Adviser in the Health Safety & Environment Office.

### **5.5 First aid**

You should provide details of the first aid procedures which would be needed to deal with the specific hazardous substances in this work in case of an accident or emergency.

You should consider all of the relevant factors to establish effective emergency first aid procedures. This may include removing contaminated clothing as quickly as possible, removing contamination from skin, eyes and mouth by thorough washing with water, dealing with minor cuts and small puncture wounds, washing wounds with soap and water and dressing wounds. Use PPE if required when helping injured persons. Seek help where required from first aiders, GP or hospital. Emergencies should be taken straight to hospital and call ambulance if necessary (Call Security on extension 3200). Explain the incident and hazardous substances to medical staff and if possible give them with a copy of the COSHH risk assessment.

## 5.6 Emergency contacts

You should provide the names and contact details of people to contact in case of an accident or emergency. This must include the name of the principal investigator or manager who is in charge of and understands the work together with details of other relevant persons including the workers doing the work and colleagues involved in the work.

## Section 6 Approval

In this section the assessor and principal investigator or manager must sign and date the form to state that they have assessed the risks and reviewed and approved the risk assessment. The manager, principal investigator or person in charge of the work is responsible for ensuring the risks associated with their work are properly assessed and recorded. The principal investigator or manager may delegate the work of preparing a risk assessment to any competent member of the team but responsibility for approving the risk assessment remains with the principal investigator or manager.

### 6.1 Assessor

The person who carries out the risk assessment on behalf of the principal investigator or person responsible for the work must sign this part of the form.

### 6.2 Principal investigator / Responsible person

The principal investigator or person responsible for the work (eg manager, supervisor or course leader) must sign this part of the form to confirm that they have reviewed and approved the risk assessment. You must check that the assessment has been carried out correctly and to a suitable and sufficient standard identifying the hazards, risks, who might be at risk and the selection of appropriate controls for the work.

## Stage 2 Monitor the Work

The principal investigator or manager must carefully monitor the work. Monitoring is necessary to ensure compliance in the implementation of all the control measures identified as necessary through the COSHH risk assessment. If your risk assessment is suitable and sufficient for the work then each identified control measure is necessary to prevent or control exposure to risk. Compliance is therefore both necessary and a legal requirement.

It is also necessary to ensure that the control measures and procedures continue to be appropriate. You should regularly check what people are doing and the activities to ensure that the work is done safely. The type of monitoring needed is proportional to the risks, with higher risk work requiring a higher level of monitoring than lower risk work. Where problems are identified such as with the risk assessment, controls or the need for additional training or supervision then action must be taken and the necessary changes or improvements must be to the risk assessment, procedures, instructions, training or supervision.

## Stage 3 Review and Revise the COSHH Risk Assessment

COSHH risk assessments must be reviewed regularly and immediately if there is any reason to suspect the assessment is no longer valid such as if there has been a significant change to the work



or to the risks of the work (eg as a result of changes to the work or monitoring). When reviewing the risk assessment the effectiveness of the preventative or control measures should be carefully re-examined. COSHH risk assessments should in any case be reviewed at least annually. If review of the risk assessment concludes that changes are required then those changes must be made. Never make any changes directly to the original COSHH risk assessment form but always to a new version (eg version 1, v2, v3 etc) of the form.

#### **Stage 4 Records of the COSHH Risk Assessment**

The principal investigator or manager must keep their COSHH risk assessments and any other relevant records. The COSHH risk assessment should always be completed by computer so that you will have electronic records, other people can easily read it, and the risk assessment can be easily reviewed and amended where required and communicated.

All changes to COSHH risk assessments should be made electronically. Always save the original version for your electronic records and make the changes to another version. A copy of the COSHH risk assessment should always be available in each defined area where the work is done.

Employers must keep proper records relating to the work such as risk assessments, training records, maintenance and testing records. Records must be kept for at least 10 years after the activity to which the assessment relates has ceased. In some cases records must be kept for 40 years. They must be available for examination at any reasonable time by the employer, managers, safety officers, safety representatives and HSE inspectors.

## Appendix 3 – Hazard Statements

**H200** – Unstable explosives.

**H201** – Explosive; mass explosion hazard.

**H202** – Explosive, severe projection hazard.

**H203** – Explosive; fire, blast or projection hazard.

**H204** – Fire or projection hazard.

**H205** – May mass explode in fire.

**H220** – Extremely flammable gas.

**H221** – Flammable gas.

**H222** – Extremely flammable aerosol.

**H223** – Flammable aerosol.

**H224** – Extremely flammable liquid and vapour.

**H225** – Highly flammable liquid and vapour.

**H226** – Flammable liquid and vapour.

**H228** – Flammable solid.

**H240** – Heating may cause an explosion.

**H241** – Heating may cause a fire or explosion.

**H242** – Heating may cause a fire.

**H250** – Catches fire spontaneously if exposed to air.

**H251** – Self-heating; may catch fire.

**H252** – Self-heating in large quantities; may catch fire.

**H260** – In contact with water releases flammable gases which may ignite spontaneously.

**H261** – In contact with water releases flammable gases.

**H270** – May cause or intensify fire; oxidiser.

**H271** – May cause fire or explosion; strong oxidiser.

**H272** – May intensify fire; oxidiser.

**H280** – Contains gas under pressure; may explode if heated.

**H281** – Contains refrigerated gas; may cause cryogenic burns or injury.

**H290** – May be corrosive to metals.

**H300** – Fatal if swallowed.

**H301** – Toxic if swallowed.

**H302** – Harmful if swallowed.

- H304** – May be fatal if swallowed and enters airways.
- H310** – Fatal in contact with skin.
- H311** – Toxic in contact with skin.
- H312** – Harmful in contact with skin.
- H314** – Causes severe skin burns and eye damage.
- H315** – Causes skin irritation.
- H317** – May cause an allergic skin reaction.
- H318** – Causes serious eye damage.
- H319** – Causes serious eye irritation.
- H330** – Fatal if inhaled.
- H331** – Toxic if inhaled.
- H332** – Harmful if inhaled.
- H334** – May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H335** – May cause respiratory irritation.
- H336** – May cause drowsiness or dizziness.
- H340** – May cause genetic defects  
*exposure cause the hazard*>.
- H341** – Suspected of causing genetic defects.
- H350** – May cause cancer.
- H351** – Suspected of causing cancer
- H360** – May damage fertility or the unborn child
- H361** – Suspected of damaging fertility or the unborn child
- H362** – May cause harm to breast-fed children.
- H370** – Causes damage to organs.
- H371** – May cause damage to organs.
- H372** – Causes damage to organs through prolonged or repeated exposure *exposure cause the hazard*>.
- H373** – May cause damage to organs through prolonged or repeated exposure *exposure cause the hazard*>.
- H400** – Very toxic to aquatic life.
- H410** – Very toxic to aquatic life with long lasting effects.
- H411** – Toxic to aquatic life with long lasting effects.
- H412** – Harmful to aquatic life with long lasting effects.

- H413** – May cause long lasting harmful effects to aquatic life.
- EUH 001** – Explosive when dry.
- EUH 006** – Explosive with or without contact with air.
- EUH 014** – Reacts violently with water.
- EUH 018** – In use, may form flammable/explosive vapour-air mixture.
- EUH 019** – May form explosive peroxides.
- EUH 044** – Risk of explosion if heated under confinement.
- EUH 029** – Contact with water liberates toxic gas.
- EUH 031** – Contact with acids liberates toxic gas.
- EUH 032** – Contact with acids liberates very toxic gas.
- EUH 066** – Repeated exposure may cause skin dryness or cracking.
- EUH 070** – Toxic by eye contact.
- EUH 071** – Corrosive to the respiratory tract.
- EUH 059** – Hazardous to the ozone layer.
- EUH 201** – Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.
- EUH 201A** – Warning! Contains lead.
- EUH 202** – Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children.
- EUH 203** – Contains chromium (VI). May produce an allergic reaction.
- EUH 204** – Contains isocyanates. May produce an allergic reaction.
- EUH 205** – Contains epoxy constituents. May produce an allergic reaction.
- EUH 206** – Warning! Do not use together with other products. May release dangerous gases (chlorine)
- EUH 207** – Warning! Contains cadmium. Dangerous fumes are formed during use. See information supplied by the manufacturer. Comply with the safety instructions.
- EUH 208** – Contains (name of sensitising substance). May produce an allergic reaction.
- EUH 209** – Can become highly flammable in use.
- EUH 209A** – Can become flammable in use.
- EUH 210** – Safety data sheet available on request.
- EUH 401** – To avoid risks to human health and the environment, comply with the instructions for use.

## Appendix 4 – Precautionary Statements

- P101** – If medical advice is needed, have product container or label at hand.
- P102** – Keep out of reach of children.
- P103** – Read label before use.
- P201** – Obtain special instructions before use.
- P202** – Do not handle until all safety precautions have been read and understood.
- P210** – Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
- P211** – Do not spray on an open flame or other ignition source.
- P220** – Keep/Store away from clothing/.../combustible materials.
- P221** – Take any precaution to avoid mixing with combustibles...
- P222** – Do not allow contact with air.
- P223** – Keep away from any possible contact with water, because of violent reaction and possible flash fire.
- P230** – Keep wetted with...
- P231** – Handle under inert gas.
- P232** – Protect from moisture.
- P233** – Keep container tightly closed.
- P234** – Keep only in original container.
- P235** – Keep cool.
- P240** – Ground/bond container and receiving equipment.
- P241** – Use explosion-proof electrical/ventilating/lighting/.../equipment.
- P242** – Use only non-sparking tools.
- P243** – Take precautionary measures against static discharge.
- P244** – Keep reduction valves free from grease and oil.
- P250** – Do not subject to grinding/shock/.../friction.
- P251** – Pressurized container: Do not pierce or burn, even after use.
- P260** – Do not breathe dust/fume/gas/mist/vapours/spray.
- P261** – Avoid breathing dust/fume/gas/mist/vapours/spray.
- P262** – Do not get in eyes, on skin, or on clothing.
- P263** – Avoid contact during pregnancy/while nursing.
- P264** – Wash ... thoroughly after handling.
- P270** – Do not eat, drink or smoke when using this product.

- P271** – Use only outdoors or in a well-ventilated area.
- P272** – Contaminated work clothing should not be allowed out of the workplace.
- P273** – Avoid release to the environment.
- P280** – Wear protective gloves/protective clothing/eye protection/face protection.
- P281** – Use personal protective equipment as required.
- P282** – Wear cold insulating gloves/face shield/eye protection.
- P283** – Wear fire/flame resistant/retardant clothing.
- P284** – Wear respiratory protection.
- P285** – In case of inadequate ventilation wear respiratory protection.
- P231 + P232** – Handle under inert gas. Protect from moisture.
- P235 + P410** – Keep cool. Protect from sunlight.
- P301** – IF SWALLOWED:
- P302** – IF ON SKIN:
- P303** – IF ON SKIN (or hair):
- P304** – IF INHALED:
- P305** – IF IN EYES:
- P306** – IF ON CLOTHING:
- P307** – IF exposed:
- P308** – IF exposed or concerned:
- P309** – IF exposed or if you feel unwell:
- P310** – Immediately call a POISON CENTER or doctor/physician.
- P311** – Call a POISON CENTER or doctor/physician.
- P312** – Call a POISON CENTER or doctor/physician if you feel unwell.
- P313** – Get medical advice/attention.
- P314** – Get medical advice/attention if you feel unwell.
- P315** – Get immediate medical advice/attention.
- P320** – Specific treatment is urgent (see ... on this label).
- P321** – Specific treatment (see ... on this label).
- P322** – Specific measures (see ... on this label).
- P330** – Rinse mouth.
- P331** – Do NOT induce vomiting.
- P332** – If skin irritation occurs:
- P333** – If skin irritation or rash occurs:

- P334** – Immerse in cool water/wrap in wet bandages.
- P335** – Brush off loose particles from skin.
- P336** – Thaw frosted parts with lukewarm water. Do not rub affected area.
- P337** – If eye irritation persists:
- P338** – Remove contact lenses, if present and easy to do. Continue rinsing.
- P340** – Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P341** – If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P342** – If experiencing respiratory symptoms:
- P350** – Gently wash with plenty of soap and water.
- P351** – Rinse cautiously with water for several minutes.
- P352** – Wash with plenty of soap and water.
- P353** – Rinse skin with water/shower.
- P360** – Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
- P361** – Remove/Take off immediately all contaminated clothing.
- P362** – Take off contaminated clothing and wash before reuse.
- P363** – Wash contaminated clothing before reuse.
- P370** – In case of fire:
- P371** – In case of major fire and large quantities:
- P372** – Explosion risk in case of fire.
- P373** – DO NOT fight fire when fire reaches explosives.
- P374** – Fight fire with normal precautions from a reasonable distance.
- P375** – Fight fire remotely due to the risk of explosion.
- P376** – Stop leak if safe to do so.
- P377** – Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- P378** – Use ... for extinction.
- P380** – Evacuate area.
- P381** – Eliminate all ignition sources if safe to do so.
- P390** – Absorb spillage to prevent material damage.
- P391** – Collect spillage.
- P301 + P310** – IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P301 + P312** – IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

**P301 + P330 + P331** – IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

**P302 + P334** – IF ON SKIN: Immerse in cool water/wrap in wet bandages.

**P302 + P350** – IF ON SKIN: Gently wash with plenty of soap and water.

**P302 + P352** – IF ON SKIN: Wash with plenty of soap and water.

**P303 + P361 + P353** – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

**P304 + P340** – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

**P304 + P341** – IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

**P305 + P351 + P338** – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**P306 + P360** – IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

**P307 + P311** – IF exposed: Call a POISON CENTER or doctor/physician.

**P308 + P313** – IF exposed or concerned: Get medical advice/attention.

**P309 + P311** – IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

**P332 + P313** – If skin irritation occurs: Get medical advice/attention.

**P333 + P313** – If skin irritation or rash occurs: Get medical advice/attention.

**P335 + P334** – Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.

**P337 + P313** – If eye irritation persists: Get medical advice/attention.

**P342 + P311** – If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

**P370 + P376** – In case of fire: Stop leak if safe to do so.

**P370 + P378** – In case of fire: Use ... for extinction.

**P370 + P380** – In case of fire: Evacuate area.

**P370 + P380 + P375** – In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.

**P371 + P380 + P375** – In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

**P401** – Store ...

**P402** – Store in a dry place.

**P403** – Store in a well-ventilated place.

**P404** – Store in a closed container.



**P405** – Store locked up.

**P406** – Store in corrosive resistant/... container with a resistant inner liner.

**P407** – Maintain air gap between stacks/pallets.

**P410** – Protect from sunlight.

**P411** – Store at temperatures not exceeding ... oC/...oF.

**P412** – Do not expose to temperatures exceeding 50 oC/122oF.

**P413** – Store bulk masses greater than ... kg/... lbs at temperatures not exceeding ... oC/...oF.

**P420** – Store away from other materials.

**P422** – Store contents under ...

**P402 + P404** – Store in a dry place. Store in a closed container.

**P403 + P233** – Store in a well-ventilated place. Keep container tightly closed.

**P403 + P235** – Store in a well-ventilated place. Keep cool.

**P410 + P403** – Protect from sunlight. Store in a well-ventilated place.

**P410 + P412** – Protect from sunlight. Do not expose to temperatures exceeding 50 oC/122oF.

**P411 + P235** – Store at temperatures not exceeding ... oC/...oF. Keep cool.

**P501** – Dispose of contents/container to ...

## Appendix 5 – Prohibition of Certain Substances Hazardous to Health for Certain Purposes

<b>Description of substance</b>	<b>Purpose for which the substance is prohibited</b>
1. 2-naphthylamine; benzidine; 4-aminodiphenyl; 4-nitrodiphenyl; their salts and any substance containing any of those compounds, in a total concentration equal to or greater than 0.1 per cent by mass.	Manufacture and use for all purposes including any manufacturing process in which a substance described in Column 1 of this item is formed.
2. Sand or other substance containing free silica.	Use as an abrasive for blasting articles in any blasting apparatus.
3. A substance— (a) containing compounds of silicon calculated as silica to the extent of more than 3 per cent by weight of dry material, other than natural sand, zirconium silicate (zircon), calcined china clay, calcined aluminous fireclay, sillimanite, calcined or fused alumina, olivine; or (b) composed of or containing dust or other matter deposited from a fettling or blasting process.	Use as a parting material in connection with the making of metal castings.
4. Carbon disulphide.	Use in the cold-cure process of vulcanising in the proofing of cloth with rubber.
5. Oils other than white oil, or oil of entirely animal or vegetable origin or entirely of mixed animal and vegetable origin.	Use for oiling the spindles of self-acting mules.
6. Ground or powdered flint or quartz other than natural sand.	Use in relation to the manufacture or decoration of pottery for the following purposes: (a) the placing of ware for the biscuit fire; (b) the polishing of ware; (c) as the ingredient of a wash for saggars, trucks, bats, cranks, or other articles used in supporting ware during firing; and (d) as dusting or supporting powder in potters' shops.
7. Ground or powdered flint or quartz other than— (a) natural sand; or	Use in relation to the manufacture or decoration of pottery for any purpose except—

**Description of substance**

**Purpose for which the substance is prohibited**

- |  |   |
|--|---|
| <p>(b) ground or powdered flint or quartz which forms parts of a slop or paste.</p>  | <p>(a) use in a separate room or building for—<br/>(i) the manufacture of powdered flint or quartz, or<br/>(ii) the making of frits or glazes or the making of colours or coloured slips for the decoration of pottery;</p> <p>(b) use for the incorporation of the substance into the body of ware in an enclosure in which no person is employed and which is constructed and ventilated to prevent the escape of dust.</p> |
| <p>8. Dust or powder of a refractory material containing not less than 80 per cent of silica other than natural sand.</p>  | <p>Use for sprinkling the moulds of silica bricks, namely bricks or other articles composed of refractory material and containing not less than 80 per cent of silica.</p>  |
| <p>9. White phosphorus.</p>  | <p>Use in the manufacture of matches.</p>   |
| <p>10. Hydrogen cyanide.</p>   | <p>Use in fumigation except when—<br/>(a) released from an inert material in which hydrogen cyanide is absorbed;<br/>(b) generated from a gassing powder; or<br/>(c) applied from a cylinder through suitable piping and applicators other than for fumigation in the open air to control or kill mammal pests.</p>   |
| <p>11. Benzene and any substance containing benzene in a concentration equal to or greater than 0.1 per cent by mass, other than—<br/>(a) motor fuels covered by Council Directive 85/210/EEC (OJ No. L96, 3.4.85, p. 25);<br/>(b) waste covered by Council Directives 75/442/EEC (OJ No. L194, 25.7.75, p. 39), as amended by Council Directive 91/156/EEC (OJ No. L78, 26.3.91, p. 32), and 91/689/EEC (OJ No. L377, 31.12.91, p. 20).</p> | <p>Use for all purposes except—<br/>(a) use in industrial processes; and<br/>(b) for the purposes of research and development or for the purpose of analysis.</p>   |
| <p>12. The following substances—<br/>Chloroform CAS No. 67-66-3;<br/>Carbon Tetrachloride CAS No. 56-23-5;<br/>1,1,2 Trichloroethane CAS No. 79-00-5;<br/>1,1,2,2 Tetrachloroethane CAS No. 79-34-5;</p>   | <p>Supply for use at work in diffusive applications such as in surface cleaning and the cleaning of fabrics except for the purposes of research and development or for the purpose of analysis.</p>   |

**Description of substance**

**Purpose for which the substance is prohibited**

1,1,1,2 Tetrachloroethane CAS No. 630-20-6;  
 Pentachloroethane CAS No. 76-01-7;  
 Vinylidene chloride  
 (1,1 Dichloroethylene) CAS No. 75-35-4;  
 1,1,1 Trichloroethane CAS No. 71-55-6,  
 and any substance containing one or more of  
 those substances in a concentration equal to or  
 greater than 0.1 per cent by mass, other than—  
 (a) medicinal products; (b) cosmetic products.

In this Schedule—

“aerosol dispenser” means an article which consists of a non-reusable receptacle containing a gas compressed, liquefied or dissolved under pressure, with or without liquid, paste or powder and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state;

“blasting apparatus” means apparatus for cleaning, smoothing, roughening or removing of part of the surface of any article by the use as an abrasive of a jet of sand, metal shot or grit or other material propelled by a blast of compressed air or steam or by a wheel;

“CAS No. ” is the number assigned to a substance by the Chemical Abstract Service;

“cosmetic product” has the meaning assigned to it in regulation 2(1) of the Cosmetic Products (Safety) Regulations 1996(1) (including any aerosol dispenser containing a cosmetic product);

“gassing powder” means a chemical compound in powder form which reacts with atmospheric moisture to generate hydrogen cyanide;

“medicinal product” means a substance or preparation which is—  
 (a) intended for use as a medicinal product within the meaning of section 130 of the Medicines Act 1968(2); or  
 (b) a substance or preparation specified in an order made under section 104 or 105 of the Medicines Act 1968 which is for the time being in force and which directs that specified provisions of that Act shall have effect in relation to that substance or preparation as such provisions have effect in relation to medicinal products within the meaning of that Act;

“use as a parting material” means the application of the material to the surface or parts of the surface of a pattern or of a mould so as to facilitate the separation of the pattern from the mould or the separation of parts of the mould;

“white oil” means a refined mineral oil conforming to a specification approved by the Executive and certified by its manufacturer as so conforming.