

# Chemical Safety – Control of Substances Hazardous to Health Guidance (a managers guide)

---

Published document title:	Chemical Safety – Control of Substances Hazardous to Health Guidance (a managers guide)
Unique reference number:	HSU-HS-GU-004-Mar-14
Date issued:	March 2014
Previous review dates:	February 2011
Next review date	March 2016
Document type:	Guidance
Version number	v1.0
Related documents:	COSHH risk assessment template
Document owner:	Health & Safety Unit
Lead contact:	Mr K Hughes
Document approved by:	Head of Health and Safety

## Introduction

Hazardous substances, in particular chemicals, are commonly used in a variety of processes (eg laboratory experiments, gardening, painting, maintenance, cleaning etc) in one form or another (liquids, solids, gases, dusts etc) across the entire University; it is conceivable then, most of us will encounter them on a daily basis. In some cases, exposure will be limited to low hazard substances or the exposure might only be occasional; however, measures need to be implemented to ensure the health of a person is not put at risk.

## Aim

The aim of this guidance document is to provide managers with an overview of the key requirements of The Control of Substances Hazardous to Health Regulations 2002 (as amended) and draw attention to other related legislation. By necessity, it is relatively detailed and, as such, managers may consider it too overwhelming for use by their staff. Therefore, managers are encouraged to use this guidance to assist in the development of a simplified document ('local rules') for local use.

## Legislation and other sources of information

The Control of Substances Hazardous to Health Regulations 2002 (COSHH) (as amended), provide the legal framework for controlling exposure to hazardous substances in the workplace. It requires employers to prevent or adequately control the exposure of their employees and other persons who may be affected to hazardous substances. In addition, the Regulations require: the maintenance, examination and testing of control measures; the provision of information, instruction and training; emergency planning (procedures to deal with accidents, incidents and emergencies); and, in some cases, exposure monitoring and health surveillance of employees.

The Regulations, which are available for download from [www.legislation.gov.uk](http://www.legislation.gov.uk), are supplemented by an Approved Code of Practice, guidance and a wealth of useful information available from [www.hse.gov.uk/coshh](http://www.hse.gov.uk/coshh).

Other related regulations, which are available from [www.hse.gov.uk](http://www.hse.gov.uk), include:

- The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP);
- The Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation). Note: From 1<sup>st</sup> June 2015 the CLP Regulation will replace CHIP;
- The Registration, Evaluation, Authorisation & Restriction of Chemicals (REACH)

In addition, copies of HSE publication EH40, containing the list of Workplace Exposure Limits for use with the COSHH Regulations is available for download from [www.hse.gov.uk/pubns/books/eh40](http://www.hse.gov.uk/pubns/books/eh40).

## Hazardous substances covered under the COSHH Regulations

Hazardous substances can take many forms, some examples are given below:

- Chemicals
- Products containing chemicals

- Fumes and dusts
- Vapours and mists
- Nanotechnology (useful information available from [hse.gov.uk/nanotechnology](https://www.hse.gov.uk/nanotechnology))
- Gases and asphyxiating gases
- Biological agents (bacteria or other microorganisms)

## Hazardous substances not covered under the COSHH Regulations

1. Lead and asbestos which have their own specific regulations
2. Where the substance is hazardous to health solely by virtue of its radioactive, explosive or flammable properties, or solely because it is at a high or low temperature or a high pressure
3. Biological agents that are outside the employer's control, eg catching an infection from a colleague

## Exposure to hazardous substances – potential health effects/routes of entry

### Potential health effects include:

- Skin irritation or dermatitis as a result of skin contact
- Asthma being triggered by a substance at work
- Losing consciousness as a result of being overcome by fumes
- Cancer, which may appear long after the exposure to the substance that caused it
- Infection from bacteria and other micro-organisms (biological agents)

### Routes of entry:

There are four primary routes of entry into the body: ingestion, absorption, inhalation and injection:

- Ingestion – a substance is taken into the body by mouth (swallowing). Ingestion of the substance may occur as a result of eating in a contaminated work area or hand-to-mouth actions such as, pens in mouth, biting finger nails, smoking
- Absorption – a substance is in contact with the eyes or skin (this effect is greatly increased through cuts or skin abrasions) may be either absorbed into the body or cause local effects
- Inhalation – a substance is taken into the body by breathing it in. In the lungs, very tiny blood vessels are in constant contact with the air we breathe in. As a result, airborne contaminants can be easily absorbed through this tissue. In the occupational environment, this is generally the most important route of entry
- Injection – a substance is taken into the body by the bloodstream. Injection of the substance may occur as a result mechanical injury from contaminated "sharps" such as, blades, hypodermic needles, glass

### The effects of the above can be:

- Local – only affecting the part of the body exposed (skin, eyes, mouth, stomach, lungs);
- Systemic – spread through the body (blood, bones, liver, nervous system)
- Cumulative – may not have an effect after initial exposure, but repeated exposure causes problems

## Principles of good control practice

Schedule 2a of the COSHH Regulations defines the following as good control practice:

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

### For adequate control of hazardous substances:

- Apply the eight principles of good control practice (see above) for the control of substances hazardous to health,
- Ensure that the Workplace Exposure Limit is not exceeded, and
- Ensure that exposure to hazardous substances that can cause occupational asthma; cancer; or damage to genes that can be passed from one generation to another, is reduced as low as is reasonably practicable.

## Risk assessment

A suitable and sufficient risk assessment must be undertaken before the commencement of any activity requiring the use of substances hazardous to health. Briefly, the assessment should:

- Identify the hazardous substances present (including any that are created by the process). If the hazardous substance has been purchased through a chemical supplier, study the safety data sheet carefully as it will contain useful information,
- Consider and discuss with colleagues, the risks the hazardous substances present to people's health. Remember to include all groups of people who could come into contact with the substance, ie staff, students, contractors, visitors and members of the public. Also, certain groups of people could be more vulnerable than others, eg pregnant women, nursing mothers, young persons, individuals with a suppressed immune system,
- Consider also non-toxic risks such as fire and explosion risks – although this is not a specific requirement under the COSHH Regulations, it is best practice to consider all the risks together,
- Where there are significant risks, the action needed to remove or reduce them to acceptable levels (bearing in mind the costs) needs to be decided upon, and
- If the **risks are trivial**, no further action is required.

**Note:** A University COSHH risk assessment template can be downloaded by clicking [here](#)

Although the assessment must include a review date, it should remain a 'living' document and be reviewed if circumstances change. It should definitely be reviewed when:

- There is reason to suspect the assessment is no longer valid,
- There has been a significant change in the work, or
- The results of exposure monitoring show it to be necessary.

### Who should undertake the risk assessment?

Although the University, as the employer, is legally responsible for undertaking risk assessments, this has been delegated down through to Schools and Departments as they have far greater knowledge of the hazardous substances in use within their areas.

Except in very simple cases, whoever carries out the assessment will need to:

- Have access to and understand the COSHH Regulations and relevant Approved Codes of Practice or to someone else who does;
- Be able to get all the necessary information and have the knowledge and experience to make correct decisions about the risks and the actions needed.

The assessment therefore, should be made by someone who is familiar with the activity, who has access to the relevant information and who has the knowledge and experience to make good judgements about the risks involved and the actions needed to minimise them.

In some cases, further advice may be needed and this can be obtained from School/Departmental members of staff/safety advisers, employee safety representatives or the Health and Safety Unit.

### Complying with the COSHH Regulations

Step 1	Assess the risks
Step 2	Decide what precautions are needed
Step 3	Prevent or adequately control exposure
Step 4	Ensure that control measures are used and maintained
Step 5	Monitor the exposure
Step 6	Carry out appropriate health surveillance
Step 7	Prepare plans and procedures to deal with accidents, incidents and emergencies
Step 8	Ensure employees are properly informed, trained and supervised

The above steps in more detail:

#### Step 1: Assess the risks

Identify the hazardous substances present in the workplace, which may include:

- Substances supplied to you
- Substances produced by the work activity (eg fumes, vapours, aerosols or other by-products)
- Final products and waste materials

Consider what risks these substances pose to people's health (this may need some research and reference to safety data sheets etc).

## Step 2: Decide what precautions are needed

- If you identify significant risks, decide on the action you need to take to remove them or reduce them to acceptable levels
- Compare any control systems you already use with good work practices and industry standards
- Remember to check that your control systems work and are effective
- Consider whether the substance could be absorbed through the skin
- Keep a record of the main findings and the actions taken to protect people
- Make a record even if it poses little or no risk, to show it has been considered
- You should review the assessments when something changes (eg the substance is no longer used, or the work has changed)

## Step 3: Prevent or adequately control exposure

Exposure to hazardous substances must be prevented if it is reasonably practicable to do so; this could be achieved by:

- Changing things so that the substance is not needed or generated
- Replacing it with a safer alternative
- Using it in a safer form (eg pellets instead of powder, apply paints by brush rather than spraying)

Where preventing exposure is not reasonably practicable, then you must adequately control it. Consider and implement measures including, in order of priority, one or more of the following:

- Use appropriate processes, systems and engineering controls (eg use processes that minimise the amount of material used or equipment which totally encloses the process)
- Control exposure at source (eg local exhaust ventilation (LEV)) and reduce:
  - The number of persons coming into contact with the substance to a minimum
  - The level and duration of any exposure
  - The quantity of hazardous substances used or produced
  - Provide personal protective equipment (eg face masks, respirators, protective clothing etc), but **only as a last resort** and never as a replacement for other control measures which are required

Note: As with any personal protective equipment (PPE), it is essential to provide the correct size to ensure the wearer achieves an adequate fit and protection. Furthermore, if respiratory protective equipment (RPE) is provided as a control measure then, because of the different facial characteristics of RPE wearers, there is a requirement under the COSHH Regulations (and other legislation) to undertake a 'facepiece fit test' to ensure the equipment fits correctly, and is matched to the wearer.

## Step 4: Ensure control measures are used and maintained

### Using the controls

Workers have a duty to make proper use of control measures and to appropriately report any defects. To ensure this requirement is met, Schools/Departments should provide suitable training, information and appropriate supervision.

### Maintain controls

To ensure that every element of the control measure continues to perform as originally intended, exposure controls must be regularly maintained. This requirement applies to items of equipment such as LEV and to systems of work, which will have to be regularly checked to ensure they remain effective. The COSHH Regulations set specific intervals between examinations for LEV equipment, and records of examinations and tests undertaken (or a summary of them) must be retained for at least five years.

Note: Although the annual testing of LEV equipment (eg fume cupboards) is organised by Estates and Capital Development (ECD), it is important to ensure such equipment continues to operate effectively. Therefore, Schools/Departments should implement procedures for regular checks, such as measuring airflows, to confirm effective operation. In addition, if RPE is provided, it must also be examined and, where appropriate, tested at suitable intervals.

## Step 5: Monitor the exposure

If the risk assessment concludes that:

- There could be serious risks to health if control measures failed or deteriorated;
- Exposure limits might be exceeded; or
- Control measures might not be working properly

Then there is a requirement to measure the concentration of hazardous substances in the air breathed in by workers. However, this is not required if:

- it can be demonstrated by another method of evaluation (eg by a system which automatically sounds an alarm if it detects hazardous substances), that the exposure to hazardous substances is being prevented or adequately controlled

Note: Where exposure monitoring is undertaken, records should be kept and maintained for at least five years.

## Step 6: Carry out appropriate health surveillance

Health surveillance is required if workers are exposed to certain hazardous substances causing eg dermatitis or asthma, or if the risk assessment has concluded it or where:

- Where a worker is exposed to one of the substances listed in Schedule 6 of the COSHH Regulations;
- Where workers are exposed to a substance linked to a particular disease or adverse health effect and there is a reasonable likelihood, under the conditions of the work, of that disease or effect occurring and it is possible to detect the disease or health effect

Note: Where health surveillance is undertaken, a simple record (a 'health record') must be kept for at least forty years.

## Step 7: Prepare plans and procedures to deal with accidents, incidents and emergencies

Where there is a foreseeable risk of an accident, incident or emergency involving an exposure to a hazardous substance, then plans and procedures must be prepared in advance. The plans and procedures should include:

- Setting up warning and communication systems to enable an appropriate response immediately any incident occurs; and
- Ensuring information of the emergency arrangements is available to those who need to see it, including the emergency services (eg Fire Brigade)

Consider also:

- Providing right equipment to deal with the emergency (eg a spill), including protective equipment and decontamination products
- First aid provision (eg dealing with an injury)
- The appropriately trained persons to take action
- The disposal arrangements to deal with any waste created

It is important to note, the COSHH Regulations also require 'safety drills' to be practised at regular intervals.

Note: emergency procedures are not required provided the following are met:

- The quantities of hazardous substances present are such that they present only a slight risk to employees' health; and
- The measures that have been implemented in Step 3, are sufficient to control that risk;

However, when either carcinogens, mutagens or biological agents are used the requirements described in Step 7 must be fully complied with.

## Step 8: Ensure that employees are properly informed, trained and supervised

As with other health and safety legislation, this final step is particularly important; employees need to be provided with suitable and sufficient information, instruction and training. The responsibility for both identifying individual training needs and, the extent of training to be provided, will largely be a decision for local managers and supervisors.

Providing appropriate training is essential, for example; unless workers are fully conversant with any introduced control measures (eg a fume cupboard), it is unlikely these controls will be fully effective.

The COSHH Regulations require employers to provide employees with the:

- Names of the substances they work with or could be exposed to
- Risks to health from exposure to those substances
- Relevant workplace exposure limits for the substances
- Information on any safety data sheets that apply to the substances
- Main findings of the risk assessment
- Precautions that should be taken to protect themselves and others
- Importance of good hygiene standards
- Results of any exposure monitoring
- Purpose and results of any health surveillance

- Emergency procedures which need to be followed
- How to use personal protective equipment and clothing provided

From time to time, the information and training provided should be reviewed and, in particular, if there are significant changes in the type of work carried out or work methods used, updated and adapted as necessary.

It is very important that both the information and training provided is appropriate to the level of risk identified by the risk assessment and is understood by those receiving it.

Below are some examples in which employees can be provided with information and instruction:

- Involving them in undertaking or reviewing risk assessments
- Discussing the findings of risk assessments eg at meetings/toolbox talks
- Ensuring copies of risk assessments/safety data sheets/Safe Operating Procedures etc are kept readily available and in accessible locations eg a safety folder within a laboratory
- Before a new hazardous substance is used for the first time, ensuring employees have sight of the risk assessment

As mentioned above, the provision of suitable and sufficient information, instruction and training is vital. It is essential employees understand the risks arising from hazardous substances they work with or could be exposed to. The control measures are likely to be less effective if they don't know:

- Their purpose
- How to use them properly, or
- The importance of reporting faults with them

## Information regarding contractors

Contractors (including sub-contractors and the self-employed) are employed routinely in many areas and in a variety of works across the University. In Schools, these could be as Service Engineers used for repairing or maintaining equipment and, in departments (eg ECD) as builders for minor/major building/refurbishment projects. However, regardless of whatever reason they are employed, both the University and the contractor themselves have responsibilities under the COSHH Regulations.

Schools/Departments need to inform contractors if there are any hazardous substances present (and any associated health risks) in the area they intend to work. Similarly, contractors need to inform Schools/Departments if they intend to bring hazardous substances onto site.

Some examples of other points to be considered when employing contractors:

- Will the work produce by-products (such as dusts or fumes) which could be hazardous to health
- Will the proposed control measures adequately protect employees and other people
- If hazardous substances are introduced, should the information provided by the contractor be communicated to other employees
- Will the exposure to hazardous substances and any risks to employees' health be adequately controlled

Note: the co-operation (exchanging of relevant information) between the University and the contractor must be undertaken in advance of any work commencing.

## Control of Substances Hazardous to Health Flowchart

