COSHH: Control of Substances Hazardous to Health

Module 6

ROYAL SOCIETY OF CHEMISTRY

Health & Safety Essentials

Registered charity number 207890

Deciding on the specific control measures required

Objective:

In this module, you will learn what a "control measure" is, how to select control measures and how to prepare for incidents and accidents.

Control measures prevent or limit exposure to hazardous substances. The objective of COSHH is to prevent, or to adequately control, exposure to substances hazardous to health, so as to prevent ill health. **Examples of COSSH and risk assessment forms can be found at the end of this document**.

Start by looking at what is already in place and how effective it is. Changing how often a task is undertaken, or when, or reducing the number of employees nearby, can make an improvement to exposure control. This can be done by introducing controlling procedures. These could include the following: ways of working, supervision and training to reduce exposure, maintenance, examination and testing of control measures; changing worker behaviour, making sure employees follow the control measures.

In many laboratory situations, reducing risk requires some form of engineering control supplemented by procedural controls as appropriate. The control approach needed depends on the level of risk associated with the task. Control measures should be proportionate to the risk. This is determined by the quantities involved; the level, type and duration of exposure; the physical properties of the substances (dustiness or volatility); and the hazardous properties of the substance.

Control measures

Engineering Controls - Equipment can include general ventilation, extraction systems such as local exhaust ventilation, enclosures, where the air cannot be cleaned and refuges. Other control measures include spillage capture, decontamination, clean-up procedures and personal protective equipment (PPE) including Respiratory Protective Equipment (RPE).

Types of PPE include:

- Respiratory Protection (facemasks, air hoods)
- Protective gloves
- Protective clothing (lab coats)
- Protective footwear (safety shoes, boots)
- Eye protection (safety glasses, goggles and visors)

It is important that procedures are in place, that you know why you need PPE, and that you are trained to use it correctly. Otherwise, it is unlikely offer protection as required. Employers are responsible for providing protective equipment when required, and for establishing procedures to ensure that PPE is effective, such as:

- visual checks, observation and supervising individuals
- ensuring that where more than one item of PPE is worn, the different items are compatible
- when defective equipment is noted, providing prompt action and replacement

You should always wear safety spectacles as a minimum requirement at all times whilst in the laboratory.

"COSHH Essentials" (published by HSE) suggests similar hierarchical control regimes. Appropriate application of the principles of good practice for the control of exposure of substances hazardous to health will enable employers to select the optimum combination of control measures that may include:

- Totally enclosed process and handling systems
- Plant or process changes that keep the fume or vapour to a minimum, contain the substance and limit the area of contamination if a spill occurs
- Changes to systems of work such as methods that minimise emission, reduce people's exposure time, and minimise the number of people exposed
- Ventilation (enclosed/LEV/General)
- Safe handling, storage, transport and use of substances
- Hygiene and hand washing procedures

In laboratories these equate in practical terms to:

- Using a fume cupboard or other exhaust ventilation to achieve extraction
- Using a glove box or similar containment to achieve a higher degree of separation
- Purpose-designing a special facility where a particularly stringent level of control is needed
- Storing and handling chemicals safely, in an orderly manner, using labelled containers.
- Washing your hands before leaving the laboratory and immediately if contaminated.

Risks from hazards such as high pressure, reactive, flammable or radioactive substances and biological agents also need to be addressed separately and proper provisions need to be made, as should risks to the environment outside the laboratory (see EHSC Note on Environmental Risk Assessment, 2008).

Having decided which control approach is needed, specific control measures can be selected. Such control measures are intended to provide protection primarily from exposure by inhalation and additional measures may be required to control risks arising from skin contact.

Safety and environmental risks

Risks from hazards such as high pressure, reactive, flammable or radioactive substances and biological agents also need to be addressed separately and proper provisions need to be made, as should risks to the environment outside the laboratory.

The risk assessments described generally cover risks to health from normal chemical laboratory activities. However, the possibility of chemical exposures from unplanned events such as spillages, equipment failure (especially local exhaust ventilation [LEV], e.g., a fume cupboard), fire and explosions should also be anticipated and suitable arrangements should be made.

Unplanned events, incidents and accidents

Emergency procedures must be in place and should be practised regularly.

You need to plan and practice dealing with foreseeable accidents, incidents or emergencies. This means having:

- The right equipment to deal with the emergency (e.g., a spill), including protective equipment and decontamination products;
- The right procedures to deal with a casualty;
- The right people trained to take action;
- The right arrangements to deal with the waste created.

Think about how you would make such information available to the emergency services. Everybody needs to know your emergency plans. Involve safety representatives and employees.

When planning for emergencies consideration should be given to:

- Individual susceptibilities
- Age
- Pregnancy
- Lone working

Accident reporting and investigation procedures should be in place, along with procedures to formally report certain types of injuries, diseases and dangerous occurrences to the UK Health and Safety Executive (HSE) under the provisions of RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995).

Beware! Controls will not work if you do not do what you are supposed to do!

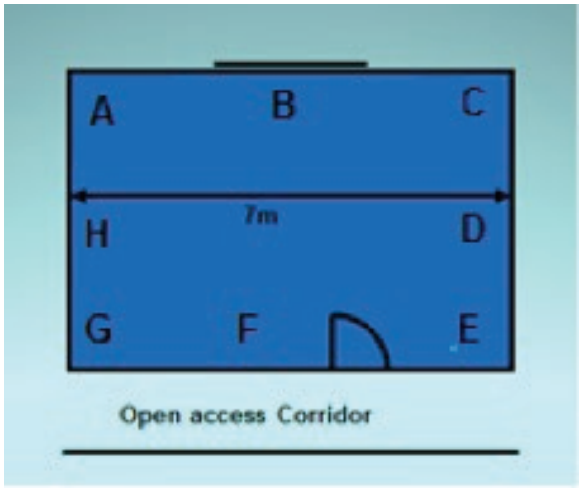
Safety should always be incorporated into planning, whether that be designing a new facility or devising a new project.

Learning Assessment 5

1. Design a laboratory

The small lab shown below will be used for a special project involving the use of carcinogens. The work will be confined to authorised personnel only and needs to be kept secure. Taking the overall shape and size of the lab shown (7 x 4 m) with a door on one side, and window on the opposite side. (Associate each item of equipment below with a letter A-H shown on the laboratory layout below – equipment may be placed in more than one position, this means that there may be some positions that are unsuitable for any equipment).

1. Fume cupboard
2. High level air handling unit
3. Lockable fridges
4. Handwash
5. Glove box



Check your answers on the separate answer sheet.

2. Emergencies A Spill Scenario - Who are you going to call?

While working in the fume cupboard, you accidentally knock over a flask of liquid labelled "Tim's", cutting your finger on the unexpectedly sharp lower edge of the rotary mixer. The liquid spill is about half a litre and runs out on to the floor.

So, what will you do?

Choose the most appropirate action from each of the options presented below

First?

a. Try and find Tim?

b. Faint?

c. Mop it up?

d. Deal with your cut?

And Next?

a. Heave a sigh of relief that you havent suffered a serious injury?

b. Throw the liquid soaked tissues in the bin?

c. Get First Aid help, put a plaster on and report it?

Which Of The Following Now Need To Happen?

a. Tim reprimanded

b. A lab inspection?

c. The risk assessment reviewed?

d. An information session put on?

e. A spill kit assembled?

Check your answers on the separate answer sheet.