# Working Safely with Substances Hazardous to Health

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1. Introduction

Welcome to this handbook, which is intended to provide you with guidance and best practice advice in relation to working with substances covered by the Control of Substances Hazardous to Health Regulations 2002. Please note that this handbook principally deals with chemical hazards. There is a separate handbook dealing with micro-organisms, which are also covered under the regulations.

Many hazardous substances are used or created within the University such as:

1. chemicals supplied with a Safety Data Sheet (SDS) in a container labelled with a hazard warning label (e.g. toxic, corrosive, irritant, etc)
2. dusts, fumes, vapours and mists created during a process (e.g. wood and metal working, welding, dyeing)
3. asphyxiants (e.g. non-toxic gases in sufficient volume to reduce oxygen concentration to dangerous levels - less than 19%)
4. adventitious pollution such as vehicle exhaust fumes, gas leaks, sewage

Activities using these hazardous substances must be assessed so that appropriate safe-guards are implemented to ensure no-one suffers injury or ill health from their use. Please refer to the accompanying policy for details. Often immediate injuries such as burns or skin irritation are obvious, but ill health, especially delayed onset illness such as cancers, could be missed. Deciding which safe-guards are required depends upon many factors, including harmfulness of substance, number of people who could be affected, frequency of activity, and the cost-benefit balance.

2. The Regulations

2.1 Background

The Control of Substances Hazardous to Health Regulations (abbreviated to COSHH) first came into being in 1988 and implemented a number of European Union Directives. Since then there have been various updates, with a significant new version coming into force in 2002.

2.2 Hazardous Substances Covered by COSHH

“Substance hazardous health” means a substance (including a preparation):

a) which is listed in Part I of the approved supply list as dangerous for supply within the meaning of the CHIP Regulations* and for which an indication of danger specified for the substance is very toxic, toxic, harmful, corrosive or irritant;

b) for which the Health and Safety Commission has approved a maximum exposure limit or an occupational exposure standard;

c) which is a biological agent;

d) which is dust of any kind, except dust which is a substance within paragraph (a) or (b) above, when present at a concentration in air equal to or greater than:

   (i) $10 \text{ mg/m}^3$, as a time-weighted average over an 8-hour period, of inhalable dust, or
(ii) 4 mg/m³, as a time-weighted average over an 8-hour period, of respirable dust;
e) which, not being a substance falling within sub-paragraphs (a) to (d), because of its chemical or toxicological properties and the way it is used or is present at the workplace creates a risk to health;

*Note that the CHIP regulations have been replaced by the Chemical Labelling and Packaging (CLP) Regulations and new “Globally Harmonised System” categories of hazardous substances replace the CHIP danger categories. However, section e) of the above is a catch-all that means COSHH still applies to such substances.

COSHH does not cover lead, asbestos, genetically modified organisms or radioactive substances, since these have their own regulations.

2.3 Requirements Under COSHH

The Regulations place general requirements on employers to protect employees and other persons from the hazards of substances used at work by risk assessment, control of exposure, health surveillance and incident planning. They were the first regulations to specify a requirement for a risk assessment to be undertaken and the regulations also contain a defined “hierarchy of control” that places obligations on an employer to manage risks according to a series of control measures. Very broadly, the Regulations require employers to prevent or reduce workers exposure to such hazardous substances by:

• Finding out what the health hazards are
• Deciding how to prevent harm to health (risk assessment)
• Providing control measures to reduce harm to health
• Making sure these measures are used
• Keeping all control measures in good working order
• Providing information, instruction and training for workers and others
• Providing monitoring and health surveillance in appropriate cases
• Planning for emergencies (leaks, spillages, unintentional releases)

3. Harmful Effects and Exposure Routes

As noted above, the first part of complying with the COSHH Regulations is to identify what the health hazards are. A wide range of harmful effects are possible, including:

• skin irritation or dermatitis as a result of skin contact
• serious eye damage, including blindness
• asthma, related to allergic substances that are inhaled
• loss of consciousness from being overcome by toxic or asphyxiant fumes / gases
• cancer, which may appear long after exposure to the substance that caused it
• death by internalisation of highly toxic powders or liquids
The above effects can occur via a range of exposure routes, including:

- breathing (inhalation);
- eating (ingestion);
- skin or eye contact (via absorption, cuts etc.)
- injection (via a needle)

The wide range of harmful effects and routes of exposure, plus degrees of hazard posed by substances means that sufficient and clear information is required to allow duty holders under COSHH to put in place controls that are appropriate for the use that hazardous substances are being put to. Labelling and material safety data sheet (SDS) information are important in this regard.

### 4. Labelling and Hazard Information (SDS) Sheets

#### 4.1 Labelling

The COSHH Regulations do not cover labelling of hazardous substances or the provision of information to end users. These are part of the directly applicable “European Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures”, known as the “CLP Regulation”. CLP implements the United Nations’ Globally Harmonised System on the classification and labelling of chemicals (GHS). GHS uses the following **pictograms** to indicate hazardous properties:

- Explosive
- Flammable
- Corrosive
- Toxic
- Human Health Effects
- Irritant
- Compressed Gas
- Oxidising
- Environmental Harm

The pictograms above are combined with **Signal Words** to indicate a level of danger:

- Danger: substances and mixtures with the most severe hazards
4.2 Material Safety Data Sheets

Although these are sometimes called “COSHH Sheets”, as noted above, they are not part of the COSHH regulations. Now mostly provided in electronic form by the supplier and available for download from their websites, these provide detailed information relating to the properties of the substance and how to store, handle and dispose of it safely. They also provide information on incompatibility and emergency situations. There is a standard format that should be followed. The SDS should be a comprehensive document and, as such, can be somewhat daunting. However, it is broken down into sections so that the information is easier to locate.

Hazard identification is shown in section 2 and includes key safety information (including relevant pictograms as above and the signal word).

Hazard statements are also shown and provide specific information relating to the hazard(s). These are grouped according to the type of hazard:

- H200-H299 Physical hazards (e.g. H200 Unstable Explosive)
- H300-H399 Health hazards (e.g. H300 Fatal if swallowed)
- H400-H499 Environmental hazards (e.g. H400 Very toxic to aquatic life)

Precautionary Statements follow the hazard statements and give advice on preventive measures to take, emergency response actions such as first aid and advice on safe storage and disposal. Precautionary statements also have codes falling into categories:

- P1 00 General (e.g. P102: Keep out of reach of children)
- P2 00 Prevention (e.g. P264: Wash hands thoroughly after handling)
- P3 00 Response (e.g. P301+P313: IF SWALLOWED: Get medical advice/attention)
- P4 00 Storage (e.g. P410: Protect from Sunlight)
- P5 00 Disposal (e.g. P501: Dispose of contents/container to...)

Supplementary information contains any of the additional labelling phrases included in CLP, but that are not part of the GHS. To indicate this, the codes all start “EU”.

- EUH001-EUH099 Supplementary hazards (risk phrases) which were in DSD/DPD* but are not in the GHS
- EUH201-EUH299 Supplemental label elements for certain mixtures

*DSD was the Dangerous Substances Directive, DPD was the Dangerous Preparations Directive

There are other sections to the SDS that cover first aid measures, fire fighting, physical and chemical properties, stability and reactivity, toxicological information, environmental information, disposal and transport.

Sometimes SDS information from different suppliers can vary and this may result in an appropriate
level of control not being implemented. A good source of guidance in this regard is the Chemical Information section of the European Chemical Agency web site. The information on this website includes classifications from all suppliers who have made notifications and also summary information showing the main properties of concern. Should there still be uncertainty regarding appropriate levels of control following the checking of the above website and consultation with safety advisers, the precautionary principle should be applied. This would state that the higher level of control must be applied.

The ILPI website also has many useful SDS resources.

5. Risk Assessment

After the health issues have been identified the next step is to assess the risk posed by the harmful substances and specify controls that will reduce that risk. Risk assessment is a standard process and Safety Services has a policy on risk assessment that explains what is required. There is also further guidance available from sources such as the HSE.

It is important to understand that simply printing out the SDS for an agent is NOT the same as conducting a risk assessment (the latter being the legal obligation under COSHH). Whilst the SDS contains much useful information about the agent, it says nothing about the activity that the agent will be used for. The activity element is where the risk assessment comes in, since there is a great deal of difference between the risk associated with storing the agent and using it in an activity and then disposing of it safely (which is also an important consideration in the risk assessment).

5.1 Risk Assessment Database

The University has a central risk assessment database (please use Chrome web browser to access) that is intended to provide a single location for all risk assessments and related documents, including those that deal with hazardous substances. See appendix 1 for a quick start guide. The database allows the sharing of best practice and avoids duplication of effort. By structuring the risk assessment process, the database also aids completion of risk assessments and helps ensure that they are suitable and sufficient. A full user guide to the database is available. For those who cannot use the database, a paper-based form is available from Safety Services.

5.2 Matters to Consider During Risk Assessment

Hierarchy of Control

The risk assessment should not simply be a justification for undertaking the activity or using a particular substance. A fundamental aspect of risk assessment is that avoiding the activity is the best control measure that can be applied and this should be the starting point. Only if avoidance of the activity is not possible should other controls be considered. The COSHH regulations introduced the idea of a “Hierarchy of Control” that has to be followed, as shown on the next page.
The most effective controls are at the top and the least effective controls are at the bottom. Controls must be applied in order from the top down or robust justification provided for why those controls are not possible. Controls can be combined if a single control is not sufficient to reduce the risk of harm to as low a level as is reasonably practicable. A trap that is often fallen into is to specify Personal Protective Equipment (PPE) as the key control measure. As can be seen, this is the least effective control and the one that should be considered last, once all other controls have been applied in order.

Who Undertakes the Risk Assessment

It may be appropriate to appoint a team who have the knowledge and expertise to assess all procedures within a School/Directorate (e.g. Cleaning Services, Gardens & Grounds), or it may be that individuals have the requisite knowledge and expertise to assess the activities they are undertaking (e.g. Principal Investigators of research projects). Principal Investigators may allow members of their research group to undertake the assessments, but the Principal Investigator must approve the assessments as suitable and sufficient.

Generic vs Specific Risk Assessments

COSHH risk assessors need to identify types of activities within their School/Directorate, the broad level of risk for the activities and whether a generic or specific risk assessment is required, as below.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Risk Level</th>
<th>Assessment Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine procedure using proprietary products according to manufacturer instructions. For example, office, cleaning and maintenance work, undergraduate practical classes.</td>
<td>Low</td>
<td>Probably generic*</td>
</tr>
<tr>
<td>Routine procedures where controls are well documented. For example, laboratory experiments where Good Laboratory Practice (GLP, as defined elsewhere) is sufficient to control risks; workshop activities such as welding, cutting, drilling, soldering, spraying, dyeing, printing.</td>
<td>Medium</td>
<td>Probably generic*</td>
</tr>
<tr>
<td>Non-routine procedures where very harmful substances are used or created as products or by-products. For example, laboratory experiments where substances: 1. are highly toxic, potent carcinogens, explosive, pyrophoric, strongly oxidising or highly flammable; 2. require special first aid procedures (e.g. hydrofluoric acid, cyanide, phenol) 3. are asphyxiants causing oxygen concentration to fall below 19%</td>
<td>High</td>
<td>Probably Specific*</td>
</tr>
</tbody>
</table>
4. are used in large amounts without total enclosure or local exhaust ventilation (e.g. fumigation, pesticide/herbicide treatments)

*In all cases, consideration should be given to the knowledge and experience of the person who will be undertaking the activity, together with other factors such as age, physical strength and health status. Please note that specific assessment should be undertaken for pregnant persons since this is required by separate legislation.

**Completing the Assessment**

The assessment must consider how hazardous substances are used during a procedure, including waste disposal and storage/transportation if relevant. Hazardous substances may be created during a procedure and these must also be considered. In relation to waste disposal, each School / Directorate must produce detailed procedures that state how hazardous waste of different types is to be disposed of safely and in accordance with legislation. Hazardous waste may damage the environment. Whilst preventing ecological damage to the environment outside the laboratory is not strictly covered under COSHH, preventing harm to any person in the wider environment is. Safety Services can provide assistance with generation of waste procedures and also collects hazardous waste that cannot be disposed of to drain.

Each hazardous substance does not need to be assessed separately. Often, it makes sense to group them either according to their physical or chemical properties (for example, corrosives or flammables) or by their use in a particular procedure. When grouping, always consider the ‘worst case’ and treat all substances to this standard. For example, when a group of substances have occupational exposure limits then control is only adequate when the **lowest** Workplace Exposure Limit (WEL) is not exceeded. When mixtures are used, the precautions for the highest risk substance must be adopted.

In some cases it may be difficult to assess the nature and quantity of hazardous substances produced (for example, welding when fume is produced or cutting polystyrene with hot wires). In these cases the assessment should state that hazardous by-products may be formed and that an appropriate local exhaust ventilation (LEV) system is required. In other cases, for example when it is likely that the products are more hazardous than reactants, the risks created by the products must be used instead to determine the control measures required.

In some cases (for example, when use of a hazardous substance is infrequent or variable) exposure may be difficult to assess precisely. If the length of exposure is crucial for determining the type of control measure required, control measures must be based on the longest possible exposure likely to occur. This will then suffice for all activities.

An assessment (whether generic or specific) will cover a procedure that is repeated on a regular basis. However, a change that has the potential to significantly alter the level of risk will require the assessment to be reviewed. This could include use of a larger amount of a substance or using the substance in a different form, use of a new substance or undertaking the activity more frequently. There are also other reasons for reviewing assessments (see below).

**Monitoring of Control Measures**

Apart from generally reviewing risk assessments to ensure that the control measures specified are still appropriate (see below), certain types of control measure require statutory checks under COSHH. Any Local Exhaust Ventilation (LEV) equipment must undergo a thorough examination and test at least
every 14 months. A process is in place to manage this throughout the University, but it is vital that any
new LEV equipment is added to the University inventory so that testing can take place. In addition,
PPE must be checked regularly to ensure that it is functioning as intended. Usually end users will
undertake these checks. See section 9 below for further details.

Environmental Monitoring

In very rare cases it may be necessary to undertake monitoring of the working environment to
establish that levels of exposure are both as low as is reasonably practicable and in any event do not
exceed any WEL. Environmental monitoring is not needed if all hazardous material is captured and
removed, which should always be the intended situation. If risk assessment indicates that
environmental monitoring may be required, the head of health and safety must be contacted for
discussion and so a decision can be made regarding the feasibility of the work.

Informing People

Performing a risk assessment and then not communicating the findings is equivalent to not doing the
assessment. It is vital to inform everyone involved or affected by the procedure of the findings. Do
this in a way that they can understand. Confirm that they fully understand the assessment by giving
them ample opportunity to ask questions and ensure that they sign the COSHH assessment form to
confirm that they understand and will abide by the findings of the assessment.

Keep a copy of the completed COSHH risk assessment form in the workplace at a location known to all
those involved. If using the University database, PDF copies can be downloaded for local reference if
needed.

Review

Review COSHH risk assessments at least every three years or following accident, ill health or the
outcome of environmental monitoring to ensure that the control measures are still adequate to
control the risks as well as possible. This review is essential for ensuring that the risk assessment
remains “suitable and sufficient” in legal terms. Change happens and if it affects the exposure of
people to the hazards, their health could be negatively affected, so any significant changes will
require a review of the risk assessment. All sorts of changes could occur, such as: changes to the
nature or quantities of chemicals or other substances used; equipment used; the process
methodology; the environment where the activity is conducted; the people undertaking the activity.

6. Substances Posing a Very Serious Health Hazard

6.1 Relevant Substances

Certain chemical substances that are procured, produced or otherwise obtained by people in the
University can pose a very serious hazard to health. These substances must be stored and handled in
accordance with a formal process that is commensurate with this hazard. The following classes of
chemicals (henceforth called “Relevant Substances”) are covered by this duty:

- Acute Toxicity Category 1 & 2 Oral (H300), Inhalation (H330)
• Acute Toxicity Category 1 Dermal (H310)
• Contact with acid liberates very toxic gas (EUH032)
• Contact with water liberates toxic gas (EUH029)

This list is not exhaustive and Deans and Directors must ensure that all substances stored and used within their Schools or Directorates that they consider are covered by this duty (due to the nature of the substances) are controlled according to the requirements below.

### 6.2 Identifying Relevant Substances Held

Using the list above and taking into account the properties of substances with similar characteristics, Schools and Directorates (via Health & Safety Advisers) must complete an inventory or inventories (where there are multiple areas that use and store relevant substances within a School or Directorate). They must use a variety of means to complete the inventory, including scrutiny of the procurement system and COSHH risk assessments and asking Group Leaders and other staff. This inventory must be updated on an annual basis following inspection of the stored material either as part of annual safety inspection of the laboratory/area or during a separate inspection.

Group Leaders, staff and post-graduate research students must provide information to School Health & Safety Advisers upon request and must inform the key holder (see below) whenever they intend to obtain a relevant substance.

### 6.3 Security Measures

Deans and Directors must implement safety and security measures to control the risk of unauthorised use of relevant substances. These measures will include safeguards to ensure only staff and students authorised by the Dean/Director or their nominee to use relevant substances for research/teaching purposes can obtain/produce and have access to stocks of the substance. Any access control system must ensure that access is controlled by a senior responsible person (the “key holder”) who will oversee all access to the relevant substances and permit access only during normal working hours. See below for details of acceptable people for this role and options for access methods. Stores must be secured at all times other than the time taken for items to be added or removed or inventories checked/updated.

Deans/Directors must ensure that local procurement, use and disposal inventories are maintained for each relevant substance (see Appendix 2 for example form), with inventories showing:

- A unique reference number for each container of relevant substance
- The date each relevant substance was obtained
- The quantity of substance obtained
- The initial total weight/volume of the container and contents
- The date and weight/volume* of substance removed
- The total weight of container and contents or remaining volume of contents* after removal of the substance
- The date of eventual disposal of a container
- All the above interactions will be recorded with the name and signature of the person adding/removing the substance

*For small volumes of liquid substances, recording of container weights is a more accurate method of establishing that material has not been removed without consent. However, for containers of
substances larger than 500ml it is acceptable to record the volume removed and mark with a dated line the side of the stock container to show the top of the liquid remaining.

6.4 Review of Holding

When considering using a relevant substance, if at all possible use should be avoided. If, after deciding as part of a risk assessment that a relevant substance must be used, only the smallest amount needed should be procured/produced. If possible, avoid storing a stock of the relevant substance (i.e. use it all at the time). If a stock is maintained, the ongoing requirement to keep this stock must be assessed at least annually and if usage records indicate that the substance is not being used, the substance should be safely disposed of. This is particularly the case for substances that are both commercially available and relatively inexpensive.

6.5 Loss or Theft and Training

Any suspected loss of relevant substances must be reported immediately to the Health & Safety Adviser, who will report this to the Head of Safety Services immediately. The Head of Safety Services will keep a list of secure stores for relevant substances. S/he will monitor safety and security arrangements of these stores on a regular basis.

The Head of Safety Services will organise training for Health & Safety Advisers and other relevant staff. The Head of Security will organise training for Group Leaders and other staff as required by external Agencies.

6.6 Stock vs Working Solutions

Small amounts of low concentration working solutions of relevant chemicals are not likely to present a serious risk to health, but significant quantities of (especially) concentrated solutions could present as much of a risk to health as the main stock of powder/liquid. Users must always endeavour to keep as small an amount of working stock as possible and if there is a significant risk posed by the working solutions, these must be treated as for the main stock container.

6.7 Key Holder and Access Protocols

Key Holder

The Key holder is a very important role. This must be a responsible and senior person who has been with the University for a minimum of 5 years and who understands fully the issues at stake. It is envisaged that each secure store for relevant substances will require at least two key holders to provide cover for absence and to spread the work load. Key holders should, if possible, not be people who require access to the secure store for the purpose of removal and use of relevant substances for their own work. All key holders will receive induction into the role by the Head of Safety Services.

Access Protocols

The following two protocols are at present sanctioned. No other means of accessing secure stores for relevant substances are permitted.
Protocol 1

- The key holder personally oversees access to the secure store, including the updating of the inventory by the person who needs access.

Protocol 2

- The key holder permits access to the store only for workers who have been notified to them in writing as requiring access
- This notification must be from the line manager / supervisor of the person who requires access and must state the name and quantity of substance to be taken
- Separate notification is required for every request to access the secure store
- The identified worker is given the key by the key holder and accesses the secure store
- They update the inventory as required under this policy and must return the key immediately to the key holder on completion of access to the store
- The key must be returned to the key holder during the same working day that it is provided to the identified worker. No overnight retention is allowed
- The identified worker will not permit access to the key or secure store by another person and will not remove any other substances from the store

7. Health Surveillance

7.1 The Need for Health Surveillance

The entire basis of the COSHH Regulations is to prevent exposure to hazardous agents. Hopefully that is evident from the above sections (consider, for example, the hierarchy of control). However, there are specific situations when exposure cannot be prevented and where the risk assessment determines that there is a significant risk of ill health occurring as a result. In such circumstances, health surveillance is a possible additional measure to take (providing that there is a valid means of monitoring health to identify effects resulting from exposure).

It is very important to understand that health surveillance is not (a) a substitute for undertaking a thorough risk assessment and applying all reasonably practicable steps to avoid (or minimise, if avoidance is not possible) exposure to the hazardous substance (b) a control measure that prevents harm from occurring (health surveillance can at best identify that some harm has occurred and allow the organisation to take steps to prevent or minimise any further harm).

There is guidance from the HSE on when health surveillance is appropriate:

- When there has been prior work-related ill health in the workplace/workforce
- Where there is reliance on PPE (e.g. gloves or respirators) as a control measure (to clarify, this is not where gloves are used as a precaution against accidental exposure, but when they are used to control routine exposure)
- Where there is evidence of specific work-related ill health in the industry/sector
7.2 Health Surveillance Provision

The University Occupational Health Service provides appropriate health surveillance if COSHH risk assessment or ill health reports identify the need (in the latter case, a review of the risk assessment would also naturally be required). The University will keep health surveillance records for at least 40 years (some elements of health surveillance require records to be kept for longer than 40 years). An individual may request (via Occupational Health) a copy of their health surveillance record at any time.

A range of health surveillance measures are available and appropriate for people working with different hazardous substances. Examples that may be appropriate in the University setting include:

- Spirometry (measurement of lung function) for people exposed to allergens that can cause occupational asthma
- Blood test for blood-borne pathogens (e.g. Chagas disease)
- Skin monitoring for people exposed to irritants that could cause occupational dermatitis (especially where PPE is being relied on to control exposure to the irritants)

7.3 Vaccination

Vaccination is not part of health surveillance; it is a prophylactic (a health intervention intended to prevent ill health). Hence, it is a standard element of the hierarchy of control. Vaccination can be administered by Occupational Health following it being identified via risk assessment as a suitable control measure. People employed in certain types of job within the University are offered vaccination against some illnesses (e.g. those handling certain types of waste are offered vaccination against hepatitis B). Vaccination against seasonal Influenza is not covered as part of standard University practice. Managers who wish to offer this to their staff should contact a pharmacy who will be able to provide details on how to undertake this (note that there will be a charge for this vaccination).

8. Instruction, Information, Training & Supervision

Ensuring that people are competent (via provision of adequate instruction, information and training) to undertake their work is a key element of COSHH and health & safety legislation in general. Supervision is part of good management practice, but is also a legal responsibility. The amount of each aspect will vary according to the existing level of knowledge, experience and maturity of the individual and the risk(s) posed by the hazardous substances the person is exposed to. The ultimate aim of providing instruction, information and training is to ensure competency of people. Competency is defined as “The combination of training, skills, experience and knowledge that a person has and their ability to apply them to perform a task safely whilst realising their limitations”.

Managers must not judge competency of individuals solely on qualifications held or length of time spent in particular roles. Whilst qualifications and length of service are important indicators of competency, managers must ensure that they determine the competency levels of those who work under them and provide suitable information, training, instruction and supervision to achieve the required competency level for the work being undertaken.
Training, instruction and information provision can take many forms, including formal, evaluated courses and on the job training. Within the University some training is mandatory for all new staff and research postgraduate students. Other training is offered by Safety Services on a request basis (see Safety Services website for details). On the job training and “buddying” of new workers will also form a significant element of the training and information provision, but it is vital that managers choose wisely those who will provide the training or act as “buddies”.

9. Personal Protective Equipment (PPE)

9.1 Specifying the use of PPE

As noted above in section 5.2, PPE is at the bottom of the hierarchy of control and should be seen as a “last line of defence” when dealing with serious injury or ill health risks. In such situations, where PPE is being considered, advice should always be sought from Safety Services, since careful specification of the PPE will be required and there will often be a need for training for the wearer. However, some PPE can also take the form of low level protection that is sensible to use routinely. Examples include laboratory coats and eye protection in wet laboratory areas. The need for these types of PPE often result from generic risk assessments that lead to standard systems of work such as “Good Laboratory/Workshop Practice”. Please refer to the PPE Policy and handbook for full details, but the information below is a useful overview.

9.2 Care of PPE

For any control measure to be effective, it must be maintained and checked for effectiveness at regular intervals. This applies to PPE too. PPE should not be taken for granted, stored inappropriately and never checked to ensure it is still functioning correctly. For basic PPE such as laboratory coats, a regular regime of laundering and replacing the coats when they become worn out will suffice. The emphasis with regard to laundering is to have a “regular” regime. Laboratory coats should not be used until they are so contaminated that they need to be disposed of as specialist waste!

For PPE that is being used to protect the worker from serious hazards, a formal regime of checking and maintenance is required. Manufacturer instructions will often be helpful and guidance from Safety Services can be sought. Checks and maintenance activities must be logged in a record by the person charged with undertaking them, often the PPE user. These records must be kept since they form part of the legal obligations under COSHH. For example, checks and maintenance on Respiratory Protective Equipment (except for disposable equipment) must be kept for five years from the date of the inspection. The person may need training to ensure that they can undertake checks and maintenance activities properly. Knowledge should not be assumed. Please refer to policy 26 on Personal Protective Equipment for more information.
9.3 Face Fit Testing

Where there is a need to protect the worker from airborne hazards and engineering controls (e.g. LEV) cannot be used or is insufficient to control the risk, Respiratory Protective Equipment (RPE) will be required. RPE can take various forms, but often half mask or full face respirators are used (note that “paper dust masks” are NOT considered RPE and should never be used as such). Where a close fitting mask (e.g. half mask respirator) is to be used, face fit testing must be undertaken prior to use and at intervals thereafter (every three years) or whenever a change to the worker’s face means that the mask may not be effective. Face fit testing must be undertaken by a competent person and the results recorded. See appendix 3 for people who have been trained to do this.

10. Further information

10.1 Web Information

Full text of all Regulations are available at http://www.legislation.hmso.gov.uk

The HSE Approved Code of Practice (ACoP) for COSHH (known as L5) can be downloaded from the HSE website, which also contains further COSHH resources.

The Safety Services website contains links to additional resources.

10.2 Related Policies, Procedures, Guidelines and Local Protocols

- Control of Substances Hazardous to Health (COSHH) Policy
- Personal Protective Equipment Policy
- Personal Protective Equipment Handbook
- University of Dundee Health and Safety Policy Statement
- University of Dundee Risk Assessment Database
- See also your local School/Directorate handbook/intranet

10.3 Definitions & Abbreviations

ACoP: Approve Code of Practice

CHIP: The Chemicals (Hazard Information and Packaging for Supply) Regulations (revoked)

CLP: European Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

COSHH: Control of Substances Hazardous to Health

DSD: Dangerous Substances Directive (revoked)

DPD: Dangerous Preparations Directive (revoked)
11. Document Information

11.1 Version Control

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<tr>
<th>Date</th>
<th>Author</th>
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<td>N Helps</td>
<td>V0.1 Initial draft handbook</td>
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<td>25-04-19</td>
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<td>V0.2 Updated draft to include PPE/RPE information</td>
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<td>V0.5 Further update to very serious health hazard chemicals</td>
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<td>18/11/19</td>
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<td>V1.0 Minor changes</td>
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<tr>
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<td>V1.1 Add information relating to hazardous waste management</td>
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Appendix 1 – Risk Assessment Database Quick Start Guide

See also the main guide. If you still have questions, please contact your local Health and Safety Adviser or Safety Services.

1. Open the Chrome web browser (other web browsers are not fully compatible and you may experience issues).
2. Navigate to the following link: https://filemaker.dundee.ac.uk/fmi/webd
3. You will be presented with a log in box

   ![Log in](image)

4. Type in your University username (just your initials and second name) and password.
5. You will be presented with a screen containing various database icons. Select the one called "uod_safety_database".

6. You will now be presented with the “home screen” on the database, from where you can access several different parts of the database. Your School/Directorate will be selected for you, but if you need/want to see records associated with other Schools/Directorates (remember that the database is intended to facilitate sharing of information throughout the whole University), you can do so by selecting another School/Directorate from the drop down menu.
7. To access the part of the database containing risk assessments that involve hazardous substances (COSHH), select “General Risk Assessment” (see next page).
8. You will now see a page allowing you to create a new assessment or search / show all risk assessments for the School/Directorate that was selected in the drop down menu.
You can search in a number of ways and navigate back to the home screen (icon top right). **9.** Once you have searched or shown all assessments, you will see a list of all relevant assessments. Clicking on the title of an assessment will bring up the screen below. Likewise, if you click to create a new risk assessment, the same screen will be shown, but will obviously not contain as much information.

10. You can use the icons in the top right to do various things (see main guide) and click on the tabs in the main body of the page to see / enter the following:

**Information about this assessment**
- General information relating to the assessment

**Structured Assessment**
- A formatted risk assessment template that helps you provide all the necessary information to produce a suitable risk assessment (recommended for everyone to use if possible)

**Free Format Assessment**
- A free text field that is appropriate for assessments that do not suit the structured assessment approach or for people who are experienced in writing comprehensive risk assessments

**Admin**
- Various admin features are located on this page (note, limited access)

**Amendments**
- Use this page to record any changes made during review. Don’t forget to update the version number of the document and record that here too.

11. Clicking on “Structured Assessment” brings up a page with more tabs on it. Each is used to record information about the risk assessment as follows:
Summary of Activity
A brief (but not too brief) account of what the activity is. Relevant information about what is being done, where and by who is important. Supporting documentation (PDF files) can be uploaded.

Hazards
This tab allows you to see / input chemical hazards. If entering, add the serial number of Chemical Safety Data Cards (CSDS). See below for more information on the CSDS. Once you enter the serial number, relevant information is automatically displayed. You can then enter the quantity to be used in the field for that. Non-chemical hazards can be viewed / entered in the free text box called “Other Hazards”. This is for hazards such as physical (e.g. compressed gasses, heavy items, machinery), electrical, noise, environmental (e.g. work outdoors).

Risks
This is where you view / enter information about the risks of the activity, including who can be harmed and how, together with how likely the harm will occur. When making an assessment, you need to decide which of these risks is non-trivial since these risks will require controls (see below). This is a qualitative risk assessment, which is subjective. You may need assistance from your health and safety adviser to determine all the non-trivial risks.

Controls
A range of standard control types are provided as tick boxes. When generating an assessment, seek advice from your health and safety adviser if you are not sure which of the boxes should apply to your activity. Other controls are viewed/entered in the free text field.

Associated SOPs
Some activities require a Safe Operating Procedure (SOP) to be followed either as part of the core activity or in the event of unintended events (e.g. spills). If this is the case, when generating an assessment enter the serial number of the SOP and the title will be automatically entered. For more information on SOPs, see below.

Emergency Procedures
Similarly to controls, tick boxes refer to various standard emergency procedures. If you are based in Life Sciences, you can also view them by clicking on the link. For people not based in Life Sciences, please refer to your local standard procedures. Ensure that you understand fully what the standard emergency procedures involve/ accomplish before ticking boxes to indicate that they are suitable. Any non-standard emergency procedures must be entered in the field provided. You must provide adequate information to allow a person reading the assessment to understand fully what the procedures are (consider producing an SOP you can refer to in the SOP section).

Waste Disposal
Standard waste disposal procedures can be selected with a tick box (again, you can click on the link if in Life Sciences or refer to your local procedures). In some cases special disposal procedures will be required. If so, when generating an assessment you must specify what they are. You must agree these with your local health and safety adviser and with Safety Services before stating them here.

Other Info
This provides any additional information that cannot be included in the above sections but which may be useful to the person conducting the activity.

12. If you are reading a risk assessment prepared by someone else, you must decide whether you understand fully the assessment and can comply with the requirements of it. If you are not sure or have any questions, you must speak with the person who wrote the assessment, your manager/
supervisor or your health and safety adviser. Only once all concerns and questions are addressed should you proceed to digitally sign the assessment. This is done by clicking on the button on the “Information about this assessment” tab labelled “Add My Signature”. You should not sign an assessment that is not approved (see below) or that has expired.

13. If you are writing a risk assessment and you consider that the risk assessment is complete (having sought advice as necessary from other appropriate people), you need to request approval of the assessment. You do this by clicking on the “submit for approval” button:

14. The assessment will be approved (or sent back to you if it is insufficiently detailed or inaccurate) and you will receive an email to inform you of this. At this time you can notify all the people who need to read and digitally sign the assessment.

**Chemical Safety Data Cards (CSDC)**

The CSDC part of the database is accessible via the bottom left link on the home page. As for the Risk Assessment database, you can search, view all and enter a new record. Clicking on the chemical name will bring up the details page. You will see that the format of records is similar to the risk assessment database.

The CSDC database is intended to capture key relevant safety information about chemicals. This is usually taken from Safety Data Sheet (SDS) information. When using SDS information, it is important to use UK/EU data, especially in relation to any exposure limits and standards for PPE.

**Basic Info**

Enter the information asked for. Everything is straightforward. You can use the green buttons at the bottom of the page to access information sources that are likely to be useful. Note that the version number of the document should be incremented whenever a change is made and this should be referred to in the Amendments section (e.g. “X,Y,Z updated. Now version N”). The serial number is the number you

**Classification**

This tab contains key information that will be displayed in the risk assessment when the CSDC is referred to by its serial number. All the information is available from the SDS. Ensure that Globally Harmonised System (GHS) hazard and precautionary statements are used. Do not use old “R” phrases. Click on the appropriate pictograms as shown on the SDS.

**On-line Information**

You should not need to enter anything here. The URL you entered on the basic information tab should display in the window.

**Control & Emergency Measures**

Check boxes are available in relation to standard procedures that operate within your area if these are appropriate for the chemical. It must be noted that these procedures are not specific to individual activities and the risk assessment will need to identify any additional controls required as a result of the specific use of the chemical in an activity. If special control
measures need to be applied, please specify in the free text box. Also, please indicate whether a Workplace Exposure Limit (WEL) applies to the chemical.

Amendments

When the document is reviewed, add in details of any changes here and also don’t forget to increment the document version number and note that here too.

Safe Operating Procedures

The Safe Operating Procedure (SOP) part of the database is accessible via the second down left link on the home page. As for the Risk Assessment database, you can search, view all and enter a new record. Clicking on the SOP name will bring up the details page. You will see that the format of records is similar to the risk assessment database.

Safe Operating Procedures are also known as safe systems of work and are put in place as a control measure for high risk activities where it is important that an activity is conducted in a specific way. SOPs must be followed precisely and there may be a requirement for training of a person in how to undertake the SOP.

The SOP record is split into various section tabs.

Information about this procedure

This tab contains basic information about the procedure. It is possible to limit access just to your School/Directorate if you need this. You also need to enter the email address of your line manager/supervisor, because they will receive the SOP to review as part of the approval process.

Procedure

This is a simple free text field into which you can type the procedure. SOPs need to be written in a structured and methodical way that describes at each stage how things are done. It is important that someone undertaking the procedure can follow precisely the flow of actions required. For example, do not say “put on gloves”. Say “put on gloves of type…” (specify the type of glove). The SOP is best approached by making notes as the procedure is undertaken so that important aspects are not missed.

Admin

Used for administrative purposes.

Amendments

Use this page for recording changes made to the procedure when it is reviewed. Don’t forget to increment the document version number and note that here too.
Appendix 2 – Chemical Inventory Form

The form below is an example of a form that can be used to record an inventory of relevant substances that pose a very serious health hazard (including usage and disposal logs).

Deans / Directors are free to use alternative forms or systems to record the same minimum information.
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<th>Signature</th>
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Chemical Inventory (Substances posing a very serious health hazard)

Chemical Name: _______________________________
CAS Number: ________________________________

Quantity Obtained: _______________________
Unique Identifier: _______________________
Page: _______________________

(top line below to be completed when substance first obtained)
Appendix 3 – Face Fit Testers

The following people within the University are trained and equipped to undertake face fit testing for Respiratory Protective Equipment. Face fit testing may only be performed by these people.

<table>
<thead>
<tr>
<th>Name</th>
<th>School/Directorate</th>
<th>Tel</th>
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</thead>
<tbody>
<tr>
<td>M. Rollo</td>
<td>Safety Services</td>
<td>88468</td>
</tr>
<tr>
<td>L. Grayson</td>
<td>Life Sciences</td>
<td>84244</td>
</tr>
<tr>
<td>C. Gallacher</td>
<td>Medical School</td>
<td>83153</td>
</tr>
<tr>
<td>J. MacLeod</td>
<td>Medical School</td>
<td>83011</td>
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