UNIVERSITY OF BATH HEALTH AND SAFETY STANDARD

Hazardous Substances

Version Number	Version 3	Date of Approval	March 2023	Review Date	Three years from acceptance by UHSC
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Aims	The University is committed to ensuring the health, safety and welfare of all staff, students and visitors. To achieve this the University will carry out suitable and sufficient risk assessments of all hazardous substance use, storage, handling and disposal to identify significant risks posed to the health or safety of anyone who could potentially be affected. The significant findings of these assessments will be used to identify control measures to eliminate risks to employees and others. Where elimination is not reasonably practicable then other control measures will be introduced to reduce the risk of exposure to a tolerable level, and in any case, below any identified Workplace Exposure Limit (WEL).				
Scope	The requirements of this standard apply to all employees and students of the University of Bath while undertaking work activities involving hazardous substances. Hazardous substances are not confined to laboratories but may be used in a variety of activities including cleaning, maintenance such as painting, dust generating tasks in workshops and use of oils, lubricants and adhesives. This standard does not apply to activities involving lead, asbestos or radioactive substances.				
Relevant Legislation	• Health & Safety at Work etc. Act 1974 (HASWA) • The Management of Health & Safety at Work Regulations 1999 (MHSWR) • Control of Substances Hazardous to Health Regulations 2002 (COSHH)				
Definitions	Hazardous Substance Any substance which can, under some circumstances, have a harmful effect on a person's health: Chemicals, products containing chemicals, fumes, dusts, vapours, mists, nanomaterials, gases including asphyxiate gases, biological agents and germs that can cause disease.				
	COSHH Assessment A risk assessment that concentrates on the hazards and risks from substances in the workplace.				
	Control Measure (specific to COSHH) Something implemented that prevents or adequately controls exposure to substances hazardous to health, so as to prevent ill health. This can be control equipment such as LEV, ways of working including procedures, training and supervision and worker behaviour; ensuring employees follow the control measures.				
	Principles of Good Control Practice Related to the "hierarchy of control" that must be applied when producing any risk assessment. See SHEW Risk Assessment Standard Eight generic principles defined in Schedule 2A of the COSHH Regulations. They must all be applied to obtain effective and reliable control. • Minimise emission, release and spread • Consider routes of exposure • Choose control measures proportionate to the risk				

	• Choose effective control options • Personal protective equipment – the final control option • Review the effectiveness of controls • Provide information and training • New measures, new risks
	Risk of harm is 'as low as is reasonably practicable' In terms of COSHH this means: • All control measures are in good working order. • Exposures are below the Workplace Exposure Limit, where one exists. • Exposure to substances that cause cancer, asthma or genetic damage is reduced to as low a level as possible.
	Workplace Exposure Limit (WEL) WELs are British occupational exposure limits and are set in order to help protect the health of workers. They are intended to prevent excessive exposure to specified hazardous substances by containing exposure below a set limit. WELs are concentrations of hazardous substances in the air, averaged over a specified period of time, referred to as a time-weighted average (TWA). Two time periods are used: • long-term (8 hours); and • short-term (15 minutes). Short-term exposure limits (STELs) are set to help prevent effects such as eye irritation, which may occur following exposure for a few minutes. Contained in HSE publication *"EH40/2005 Workplace Exposure Limits"*
	Suitable and Sufficient There is no absolute legal definition for this term. The COSHH assessment should be reflective of the scale of the work being carried out, all **significant** hazards should be identified, and proportional control measures applied to reduce the risk to a tolerable level. It should be clear and straightforward to understand.
	Safety Data Sheet (SDS or Material SDS) When a product is 'dangerous for supply', by law, the supplier must provide a safety data sheet. They provide information on chemical products that help users of the chemicals to make a risk assessment. They describe the hazards the chemical presents, and give information on handling, storage, waste disposal and emergency measures in case of accident. A safety data sheet is **not** a risk assessment. You should use the information it contains to help make your own assessment.
	Competent Person (specific to COSHH) A person with adequate knowledge, training and expertise, e.g., in the design of processes, control measures including ventilation and PPE, the human and technical reasons why the control measures can fail, and the importance of following the principles of good practice for the control of substances hazardous to health.
	Maintenance (specific to COSHH) Any work carried out to sustain the efficiency of control measures, not just carried out by maintenance workers. It includes visual checks on any equipment relevant to the control of exposure, inspection, servicing, observation of systems of work, and any remedial work to maintain the effectiveness of control measures. The requirement for maintenance is restricted to control of exposure, so that the duty to maintain control measures no longer applies when people are not exposed to substances hazardous to health, e.g., during periods when a process is shut down.

Responsibility for implementation	Faculty Deans Heads of Departments Technical Managers Supervisors/Managers
Training availability:	Induction Training by Supervisors/Area Safety Co-ordinators

	Standard to meet:	Accountability	Reference documents and more information
1.	Ensure COSHH assessments are carried out for all work activities within department responsibility and identified control measures implemented.	Heads of Department	HSE COSHH Pages provide guidance on completing COSHH Assessments. http://www.hse.gov.uk/coshh/index.htm HSE Approved Code of Practice and Guidance (ACOP) http://www.hse.gov.uk/pubns/books/l5.htm
2.	Appoint competent person/s to carry out the assessment and provide information on the identified prevention and control measures.	Heads of Department/ Technical Managers	HSE Page regarding competent advice http://www.hse.gov.uk/business/competent-advice.htm
3.	Gather information about the substances, the work and the working practices Visit the workplace Involve employees Consult Safety Data Sheets/Incident records Consider all routes of exposure: • Inhalation; breathing in fumes, vapours, dust • Ingestion; transfer from hand to mouth • Skin contact; contact with contaminated item • Skin puncture; needle-stick injury, cuts • Eye exposure; splash, fume, dust Who could be affected and how? For example, is the substance a carcinogen, mutagen or a cause of occupational asthma or other occupational disease?	Supervisor/ Manager	See Figure 1: *The essential structure of COSHH assessment* HSE publication HSG97 A step by step guide to COSHH Assessment http://www.hse.gov.uk/pubns/books/hsg97.htm Support provided by Area Safety Co-ordinators and SHEW
4.	Evaluate the risks to health What is the potential of a substance to cause harm (i.e., the hazard)? What is the chance of exposure occurring? How often is exposure liable to occur? What levels are people exposed to and for how long?	Supervisor/ Manager	Check whether a WEL applies and if it could be exceeded by the work HSE Workplace Exposure Limits
5.	Identify necessary and effective control measures in accordance with the "hierarchy of controls" Eliminate Substitution Apply principles of good control practice (see definition)	Supervisor/ Manager	HSE Page provides more detailed information on good control practice Good Control Practice and control measures: HSE Control measures to prevent or limit exposure to hazardous substances
6.	Control exposure to carcinogens, mutagens and asthmagens to as low as reasonably practicable (ALARP)	Supervisor/ Manager	**Chemistry Safety Guidance**

	More stringent control required due to health effects: • Prevention • Adequate Control • Use, storage, labelling and disposal • Precautions against contamination • Provision of suitable PPE, particularly in event of an uncontrolled release		
7.	Control Exposure to Biological Agents Take into consideration: • Deliberate work • Incidental exposure • Immunisation	Supervisor/ Manager	**Biological Safety Guidance**
8.	Record the assessment and provide information on significant risks to all persons potentially affected. Required by law Needs to be suitable and sufficient (see definition) Readily accessible to all users	Supervisor/ Manager	**See COSHH Assessment template attached**
9.	Review the assessment If assessment no longer valid Significant changes to work activity On a regular basis	Supervisor/ Manager	Recommended review intervals: High Risk Activities (e.g., lab work) = annual Low Risk Activities (e.g., cleaning) = every 3 years
10.	Provide suitable and sufficient information, instruction and training to include: Details of hazardous substances liable to be exposed to Significant findings of COSHH Assessment Appropriate precautions and actions to be taken Use and Importance of hygiene facilities Results of any exposure monitoring Results of Collective Health Surveillance (data privacy) Maintain records of training	Supervisor/ Manager	
11.	Generate Incident response arrangements including: Identification of hazardous substances including use, estimated amounts, storage Foreseeable types of incidents such as spills, uncontrolled release, exothermic reaction, exceedance of a WEL Safety equipment required including PPE/RPE First Aid Facilities Roles and responsibilities of employees Procedures for clean-up and waste disposal	Supervisor/ Manager	

COSHH Assessment Template

Academic/Supervisor/Researcher Name:	
Academic/Supervisor/Researcher Signature:	
Laboratory:	Date:

Minimum Laboratory Standards and working practices, such as PPE of fastened lab coat and safety glasses (BSEN 166 F) must be adhered to.	 ☐  ☐

Experiment:					
Proposed Procedure/Reaction Scheme:					
Reaction Volume	<5mL/NMR	<25ML	<100mL	<500mL	>500mL

Substances to be used:

Substance/Compound (include reagents, solvents and product)	**Stock Quantity** (g, mg, ml, etc.)	**Physical Form** (powder, liquid, vapour, etc.)	**Hazard** (taken from SDS/Class of Biological agent)	**Exposure Route** (Inhalation, skin/eye contact, ingestion, etc.)

Any **unknown** compound should be assumed to be **Toxic** and treated as such.

Risk Implications:

Can any of the substances listed above be substituted with a less hazardous one?	Y/N
Are any of the substances a carcinogen, mutagen or asthmagen? If Yes, justification required for use and special provisions to be detailed to reduce exposure to As Low As Reasonably Practicable (ALARP) (Regulations 7(5) and 7(7) of COSHH)	Y/N
Is there the possibility of a fire/explosion from any of the substances used/formed? If Yes, include control measures in Emergency procedures	Y/N
Is there a likelihood of copious amounts of gas being released or thermal runaway? Is Yes, include control measures in Emergency procedures	Y/N

Control Measures to be used:

Containment: *(tick those that apply)*	*Additional* ***Personal Protective Equipment*** *(PPE): (mark those that apply)*
Glovebox ☐ Fume Cupboard ☐ Class 2 microbiological cabinet ☐ Local Exhaust Ventilation ☐ Other (specify) ☐	 ☐  ☐  ☐  ☐  ☐  ☐  ☐ Type of glove (EN374): thin nitrile/purple nitrile Other (specify):

Waste Disposal:	*Safe disposal of waste, avoiding contamination or injury to persons or to the environment. State method of disposal, e.g., Flammable solvent waste bottle, laboratory bin, special waste, etc.*
Do any of the compounds used or produced require special disposal methods?	

Emergency Procedures:	*Identify action to be taken in the event of an incident. Give realistic spill clean-up procedures. Report all incidents.*
What should happen in case of exposure, spillage or if equipment fails?	

Making the Reaction Safe: *Provide details on how to make your experiment safe in case of emergency.*

Effectiveness of Control Measures:

Is the SDS for the chemicals used available? Has suitable instruction and training been provided?	Y/N
Is Supervision of the person/s carrying out this task required?	Y/N
Is Exposure Monitoring required, e.g. workplace exposure limit likely to be exceeded?	Y/N
Is Health Surveillance required?	Y/N

Sign on Sheet to acknowledge understanding of Risk Assessment:

Names and Signatures of other workers/researchers/PG/UG students

All others undertaking the process described/using the hazardous substances must signify that they understand the hazards and risks.

Print name:	Signature:	Date:

Figure 1: *The essential structure of COSHH assessment*