

Performing a Hazardous Substance Risk Assessment (COSHH Assessment)

This guidance is primarily aimed at those performing a risk assessment on activities where single hazardous substances are present, for example painting would require an assessment on the paint and also a separate one on the thinners.

In more complex situations where a mix of chemicals are involved it will be necessary to identify all substances, prioritise them and perform a risk assessment on those most likely to cause harm, including anything evolved or generated by the activity.

Refer to the Durham University COSHH Assessment Form F4

STAGES OF ASSESSMENT:

- Create an inventory of hazardous substances, decide which may be discontinued or disposed of; dispose of all damaged or un-labelled or out-of-code containers ensuring suitable disposal by appropriately licensed waste carrier.
- Consider usage of substance and whether a less hazardous substance could be substituted. Consult with suppliers regarding replacement substances.
- Obtain a current copy of the Material Safety Data Sheet (MSDS) from the manufacturer or supplier; manufacturer's webpages often hold this information for download.
- Reference is made to the relevant sections of the MSDS, however simply stating each section without considering how the substance is actually used, in what volumes and to what extent does not realistically fulfil a suitable and sufficient assessment of the risk. Extract the information provided in the MSDS only where it is relevant to the circumstances of use.
- Consider also substances that may be released, produced or evolved by an activity or process, for example exhaust fumes, welding fume, dusts and fibres from working on wood or other materials and waste or by-products of a process. For many of these there is existing information which the Health & Safety Service can supply on request.
- Consider what is done with the substance, in what environment, for how long and at what frequency, consider the volumes and concentrations typically used or that persons are potentially or actually exposed to.
- Consider who could realistically be exposed to the substance, taking into account particularly vulnerable persons, for example those who are pregnant or new mothers, young persons (up to the age of 18), or those susceptible to some forms of substance (asthmatics, sensitised or suffering a respiratory condition).
- From the MSDS (Section 2) find out what hazard classification the substance carries, these are typically symbols which are either black pictogram on an orange background (old version) or a black pictogram on a red and white background (new version). The old symbols are gradually being replaced by the new ones, however you may find some of the old ones on MSDS or packaging.

- Consider what form the substance is in; for liquids these may be contained in their liquid form, but can evolve vapours or mists, or could be turned to aerosol by the process; for solids, these can be broken into very small particles such as dusts, so consider what the form may be in practice. Also consider whether the activity will alter the form of the substance, e.g. drilling a hole in plasterboard would generate dust.
- Consider how the substance (taking into account the form) might affect the body, this could be ingested, inhaled, penetrate or absorb through the skin or cause damage to the skin or eyes, or a combination of these Sections 2 & 11 of the MSDS may give information on this.
- If there are Workplace Exposure Limits provided on the MSDS (Section 8) these should be included on the assessment form.
- From the MSDS list the risks to health from exposure to the product, these typically are in Section 2 and are in the format: **H314** – Causes severe skin burns and eye damage
- List the measures used to control these risks, either those in place at present or where there is more required; where more is required there should be a management plan created to allocate realistic timescales for completion and someone made responsible to ensure corrective action takes place. Information to assist in this may be found in Sections 7 & 11 of the MSDS.
- The primary criterion for health surveillance is a reasonable likelihood that an identifiable disease or ill-effect associated with exposure to a particular substance will occur in the workplace concerned, and there are valid techniques for detecting the disease or ill-health effect before it causes irreversible health effects. Section 8 of the MSDS may give this information, however for any substance that is listed as carcinogenic, a sensitiser or is listed as a serious long-term health hazard it is probable that surveillance will be required; refer to the Health & Safety Service if in doubt.
- If the substance is known to react with other substances (from the MSDS Section 10.5), indicate this as it may have implications for storage and handling.
- Appropriate Personal Protective Equipment (PPE) must be specified for the task or activity and the potential exposure; care in selecting the correct PPE is required, for which reference to Section 8 of the MSDS may be useful, however as manufacturer's sometimes refer to 'appropriate respirators' or 'impervious gloves' without correctly specifying the level of protection or the material that resists the substance for a safe period, some effort must be spent in researching the correct specification of PPE to keep the person safe for a suitable exposure time. If in doubt, please refer the matter to the Health & Safety Service who will be able to offer advice.
- The relevant First Aid measures for exposures to the substance come next and are usually found in Section 4 of the MSDS. Note that basic first-aiders may require additional training to deal with specific hazards such as chlorine poisoning or exposure to hydrofluoric acid. Note that some chemicals pose such a high risk even at very low concentrations that they require specialist controls for handling or using them e.g. a glove-box or laboratory cabinet.

- Fire extinguishers that are suitable for use is given in MSDS Section 5, along with any specific harmful vapours or gases given off when the substance is heated.
- The storage recommendations in Section 7 of the MSDS should be consulted and consideration made of the amount to be stored, where and under what conditions, also what should be done if containment fails, which is in Section 6.
- Disposal of waste, spillage and used containers is provided in Section 13, for which an appropriate recovery/recycling strategy is best practice, with some manufacturer's having a system to recover and re-use empty containers, otherwise it must be decided which waste stream is appropriate in the circumstances and arrangements given for responsible waste management.
- Using the matrix provided, consider the (realistic) consequences of exposure to the substance (given the information from the MSDS and your consideration of the activity) and the (realistic) likelihood that this will occur. Enter the consequences and likelihood and also the calculated risk rating in the relevant boxes.

RISK LEVEL

		Likelihood of Occurrence			
		Very Unlikely Little or no chance of occurrence	Unlikely A rare combination of factors would be required for an incident to result.	Possible Not certain to happen but an additional factor may result in an accident	Probable More likely to occur than not
Hazard Severity	Minor No or minor injury (first aid)	CARE	CARE	CARE	CAUTION
	Moderate Off-site medical treatment or DAFW*	CARE	CARE	CAUTION	ALERT
	Serious More than one DAFW, long-term absence	CARE	CAUTION	ALERT	STOP!
	Major Permanent disability or harm, fatality	CAUTION	ALERT	STOP!	STOP!

*DAFW – Day Away From Work

CARE	Minor harm possible, serious harm very unlikely to occur; implement controls and ensure care is taken when performing activity.
CAUTION	Minor harm probable, major harm unlikely to occur; follow all control measures, increased level of competence required and ongoing self-assessment of risks identified.
ALERT	Moderate degree of harm probable but major harm unlikely; critically assess the risks and appropriate controls. Specific competence required and ongoing assessment of risks by individual and/or supervisor.
STOP!	Serious or major harm will probably occur; stop the activity and critically assess the risks, review safety aspects of activity and implement further, appropriate controls. Consider referencing HSE or other Best Practice, consider involving HSS.

- Finally the decision needs to be made as to whether existing means of control are adequate in the circumstances or, if further control measures were identified in the assessment, action needs to be taken to ensure corrective actions are taken.

Reference to appropriate guidance may be made, for example COSHH Essentials (<http://www.hse.gov.uk/coshh/essentials/>) or task-specific information relating to a work-type <http://www.hse.gov.uk/coshh/industry.htm> .

- The assessment then must be signed and dated, a suitable review period given (e.g. once corrective actions are implemented, or annually) and the findings communicated to those who are potentially at risk of exposure.