

WHS UNIT

CHEMICAL SPILL MANAGEMENT GUIDELINES

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1 Purpose

This document outlines procedures for the management of laboratory chemical spills that may occur on campus, to minimise the effects on health and safety from exposure to chemical spills and reduce the impact on the environment.

2 Scope

These guidelines apply to all workers and others who use, transport and store chemicals in laboratories at the University of Wollongong.

3 Definitions

<i>Bund</i>	A bund is a small wall or barrier that restricts the flow of substances and contains them in a particular area.
<i>SDS</i>	Safety Data Sheets (formerly known as Material Safety Data Sheet MSDS) provide workers with information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill-handling procedures.

4 Roles and Responsibilities

Heads of School, Managers and Laboratory Supervisors are responsible for ensuring that:

- this procedure is implemented within their area of responsibility
- chemical spill kits and appropriate PPE are maintained, clearly labelled and checked during the workplace inspection process
- risk assessments and safety data sheets (SDS) are available which detail action to be taken in the event of a chemical spill
- all staff receive appropriate training to deal with chemical spills
- all staff are aware of the legal obligations and UOW standards regarding environmental pollution from chemical spills
- all major chemical spill incidents are reported through SafetyNet.

Staff and students are responsible for ensuring that they:

- do not place themselves or others at risk of injury
- keep clear of a spill when alerted to an incident
- clean up a chemical spill immediately and/or report the spill to their supervisor
- know where safety data sheets are kept, or how they can be accessed
- follow specific written procedures provided for spill control.

5 General

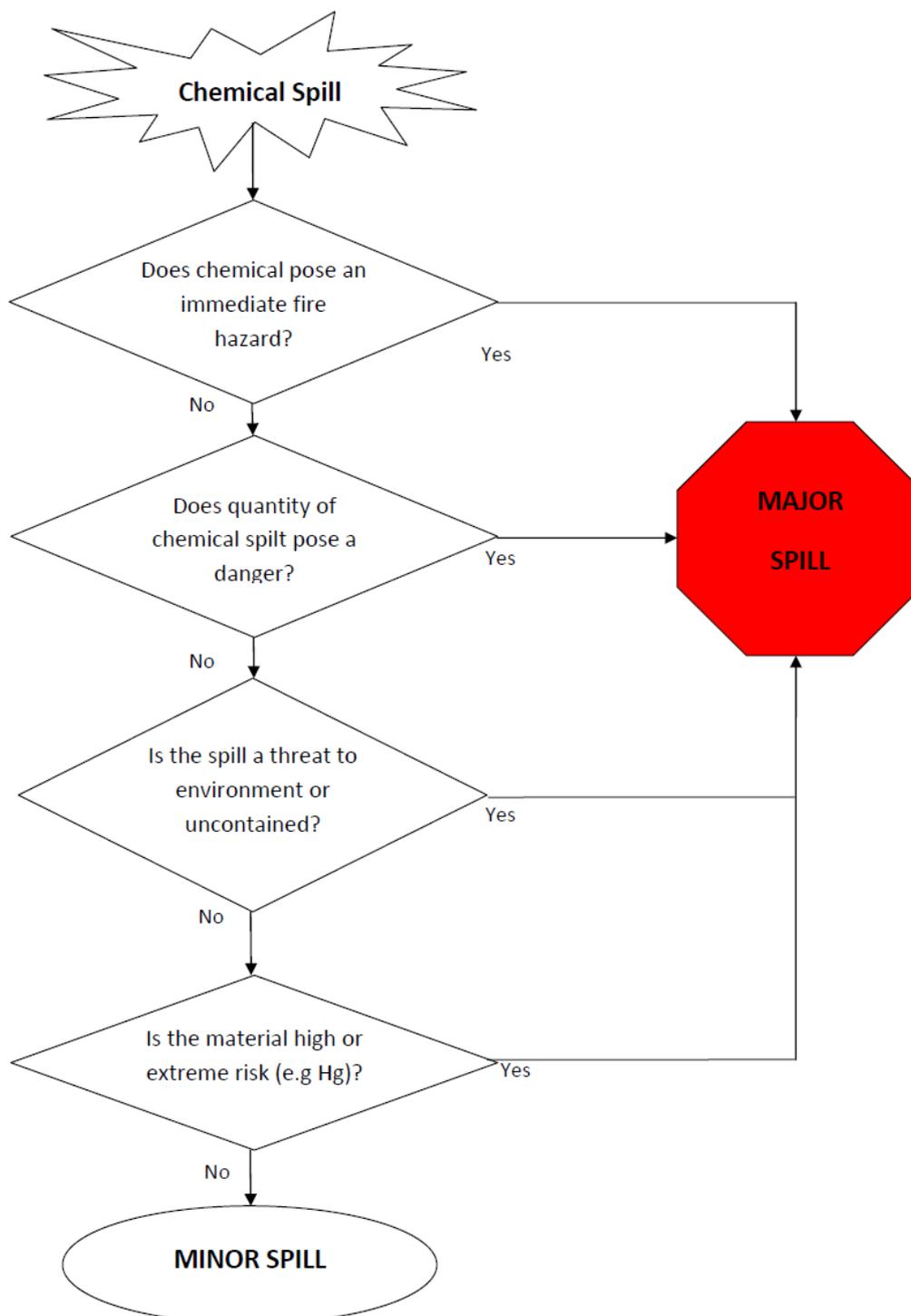
A worker handling a hazardous chemical should be aware of the correct procedures in the event of a spill. This information can be sourced through a SDS and if necessary explicitly detailed in a documented safe work procedure. Controls, such as double containment, bunding, drip trays or raised edges around work areas, must be in place to minimise the effects of a chemical spill.

Spill management and response strategies should be included during laboratory emergency planning with personnel trained in the procedures. A quick response by laboratory personnel to a chemical spill is likely to limit the consequences, whether it is a minor or major spill.

All laboratory workers should wear appropriate personal protective clothing and equipment (PPCE) when attending to a chemical spill, for example, lab coats, gloves, safety glasses, goggles, face shields and/or respirator as appropriate to the risk.

When preparing an emergency procedure for use of a hazardous substance you should consider the immediate danger to persons and ensure effective containment and clean up, appropriate disposal of waste material and notification to all relevant authorities.

6 Defining Major or Minor Spill



Spills will be either: minor or major, depending on the volume, location and hazard of the substance spilt. If any of the following apply, the spill is considered major.

1. Quantity – As a guide, if more than 100 ml/10 grams of highly hazardous chemical (carcinogen) or 1 litre/100 grams of a volatile or flammable solvent, reactive or corrosive (acid or base) liquid/solid. For some substances, for example mercury or 40% HF evacuation should be considered at < 100mL.
2. Hazard - If the chemical presents an immediate threat to human health or safety or the environment; is unknown, or is an immediate fire hazard such as an uncontrolled gas leak.
3. Location – If the chemical is outside of the laboratory or outside of the area where the material is normally used, and/or there is no trained person available to clean up the spill.

A major chemical spill will usually result in the immediate evacuation of the area, if not the entire building. For example: the uncontrolled release of ammonia from a gas cylinder in an unventilated enclosed area. The volume is large and may represent a high risk to persons in the area.

A minor chemical spill is one that the individual can clean up. For example: 5ml of concentrated Sulphuric Acid in a fume cupboard. Although the risk from concentrated acid is high it is only a small volume that can easily be neutralised and removed.

7 Major Spill Response

- **Protect yourself.** Don't touch harmful substances. Be aware that fumes may pose a risk.
- **Evacuate the laboratory.** If possible, as you leave, close doors to prevent further contamination and turn off any ignition sources.
- **Isolate and control access to the spill area.** Do not allow non-essential personnel to enter the spill area.
- **Raise the alarm.** Contact the Laboratory Manager or School Safety Coordinator, supervisor or nearest building warden. Advise security (ext 4900) to notify Emergency Services if necessary. Provide the following information:
 - Name and telephone number of caller
 - Building and room number where the incident occurred
 - Name and type of material
 - Known hazard of the materials
 - Amount of material spilled
 - Explanation of what happened
 - Condition of any injured personnel
 - Status of area
- **Apply first Aid.** If necessary source the SDS for the chemical and treat contaminated individuals as per the SDS. If required, summon a UOW First Aid Officer, or ambulance. Isolate affected persons and keep on site.
- **Decontaminate.** In conjunction with expert assistance, minimise the spread of contamination and commence clean up procedures.
- **Review.** Once the clean-up is complete, review the area.

8 Minor Spill Response

- Ensure you are wearing correct PPCE to respond to the spill.
 - Chemically resistant safety gloves;
 - goggles;
 - enclosed footwear(e.g. a pair of gum boots)
 - Cotton laboratory coat
 - Full or Half face respirator (depending on type and extent of spill) with filters appropriate for the spilt chemical
 - Always check the SDS for specific PPCE requirements

- Immediately notify others in the area of the spill. Corridors and pathways have a lot of traffic so it is important to alert passers-by of the spill and ensure the area is kept free of traffic.
- Identify the chemical/s and hazards involved (SDS, label) and use the information on the physical and chemical properties of the material to judge response.
- If there is chemical exposure to a worker, respond as quickly as possible to administer appropriate first aid.
- Approach with care - many harmful chemicals lack colour or offensive odours. Avoid breathing vapours from the spill. Never assume the chemical is harmless.
- Control the source.
- Contain the spill with a barrier (damming) or use appropriate absorbent material from the spills kit.
- Clean up promptly and thoroughly and neutralise any acids / alkalis.
- Decontaminate the affected area, equipment and clothing and dispose of any contaminated material appropriately.
- Review area when decontamination is complete. Check walkways, floors, stairs, and equipment for contamination or damage.

9 Generic Chemical Spill Response

Substance	Recommended Action
Organic Chemicals	<ul style="list-style-type: none"> ▪ Use an absorbent such as vermiculite ▪ Place spent vermiculite in a sealed labelled container for waste disposal by a licensed contractor ▪ Flammable solvents can be cleaned up with absorbent rags and then placed in fully open headed drums that are sealed, suitably labelled.
Oxidising acids	<ul style="list-style-type: none"> ▪ WARNING. DO NOT USE PAPER TOWELS OR SAWDUST TO CLEAN OXIDISING ACID SPILLS ▪ The safety data sheet must always be consulted when dealing with these types of spills. In particular the hazards of the chemical (including acute and chronic health effects), reactivity information, safety precautions for handling and specific information for dealing with spills.
Acids	<ul style="list-style-type: none"> ▪ For small spillages of acids use dry sand or carbonate to contain spill. ▪ The area should be flushed with water but not to the extent that the spillage is spread unnecessarily. ▪ Neutralise an acid with sodium bicarbonate by sprinkling generously over spill. ▪ Laboratory Spill Kits should contain soda ash (sodium bicarbonate) to sprinkle liberally over the spill. If necessary wear a P1 mask to avoid breathing soda ash dust.
Alkalis	<ul style="list-style-type: none"> ▪ Contain the alkali spill using dry sand or neutraliser. ▪ Neutralise with boric or citric acid before clean-up. ▪ Residual alkali should be washed with water ensuring no contact. ▪ Laboratory Spill Kits should contain boric acid to sprinkle liberally over the spill. If necessary wear a P1 mask to avoid breathing soda ash dust.

9.1 High and Extreme Risk Chemicals

Highly Hazardous Chemicals, such as mercury or hydrofluoric acid, require specific written procedures to detail a spill response. For example there is a [Safe Work Procedure UOW00212 Small Mercury Spills](#) in [SafetyNet](#) and [Management of Hydrofluoric Acid Guidelines](#) details HF spills response. All laboratory workers handling these highly hazardous substances should be familiar with the relevant documents and be trained in correct spills response procedures.

10 Laboratory Spill Kits

All laboratories containing hazardous chemicals must have a spill kit available to deal with spills. These kits must be specific and relevant for the nature of the chemicals that are used within the work area.

A spill kit must be clearly labelled, visible and located in an easily accessible position. All workers must be aware of the location and how to use the spill kit.

Spill kits contents should be reviewed during workplace inspections. If items are used from the spill kit arrangements should be made for immediate replacement.

A general laboratory chemical spill should include:

- **Barrier/Boom** - to contain a spill such as clean, dry sand or a commercial product or boom
- **Absorbent** - A suitable absorbent material for the chemical spill
- **Neutralisation reagents** - sodium bicarbonate (acids) or boric acid (alkalis);
- **Gloves** – Gloves appropriate for the chemicals used in the lab (disposable neoprene or nitrile)
- **Specific PPE** for the chemicals used - (dust mask, respirator, face shield)
- **Waste Containers** in which to store waste and contaminated materials - plastic bags or buckets
- **Warning signs.**



Figure 1 Chemical spill kit

11 Chemical Transport and Secondary Containment

When transporting chemicals between laboratories, secondary containment should be used to prevent a chemical spill. Secondary containment means that the primary container is placed inside a second container which may then be sealed. This is standard practice in the transport of biological, carcinogenic materials and highly hazardous material, solutions and samples is to use a secondary container. Winchester carriers should be used for solvent Winchesters.

12 Storage and Secondary Containment

Secondary containment is also recommended for the storage of chemicals to prevent the spread of the substance in the event that the primary container breaks. Containers holding solutions must be placed in a spill tray. The spill tray must be able to hold the volume of substance held within the primary container/s.

13 Decontamination and Disposal

Dispose of clean-up materials in appropriate bags or plastic buckets. These containers must be compatible with the spilled chemical. Contaminated equipment and clothing must be decontaminated and if necessary disposed of and replaced. Items that cannot be decontaminated should be disposed of as hazardous waste.

Label the spills waste container with a hazardous waste label and dispose of on the next hazardous collection day. For further information refer to [Working with Hazardous Waste](#) web page.

14 Incident Reporting

Incidents involving major chemicals spills must be reported by completing the Hazard and Incident report online using SafetyNet.

In the event of a building evacuation the WHS unit may need to carry out an investigation. An [Emergency Evacuation Debrief Form](#) must be completed by the Chief Building Warden.

In the event of an incident defined as “notifiable” by SafeWork NSW, that is, if it “*arises out of the conduct of a business or undertaking and results in the death, serious injury or serious illness of a person or involves a dangerous incident*”, the area must not be disturbed until any investigation is complete or SafeWork NSW has given authority to do so.

15 Related Documents and References

- AS 2243.2 - 2010 : Safety in laboratories - Chemical aspects
- [Emergency Evacuation Debrief Form](#)
- [Emergency Management Procedures](#)
- [Hazard and Incident Reporting Guidelines](#)
- [Laboratory Waste Disposal Guidelines](#)
- [Management of Hydrofluoric Acid Guidelines](#)
- [Selection and use of Gloves Guidelines](#)
- [Working With Hazardous Chemicals Guidelines](#)
- [Safe Work Procedure UOW00212 Small Mercury Spills](#) in [SafetyNet](#)
- [WHS Incident Notification: Fact Sheet \(SafeWork NSW\)](#)

16 Version Control Table

Version Control	Date Released	Approved By	Amendment
1	2012 November	Manager WHS	New document
2	2015 November	Manager WHS	Scheduled review – addition of oxidising acids to section 9 table