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**TITLE: DEALING WITH LABORATORY SPILLAGES**

		Date
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## Purpose

This document is designed to inform users of the hazards relating to general laboratory spillages and how to deal with them. Due to the vast array of chemical and biological agents used, and specific or unique hazards associated with them, further reading will be required by users, including risk assessments, to ensure necessary considerations are made. Specific emergency spillage procedures must be included in all activity risk-COSHH assessments.

## Scope

This document outlines the correct procedures to follow including pre-planning, first actions, minor and major spillages, clearing up, spill kit contents, spill kit locations and final disposal. It describes the training requirements and is intended for all categories of staff and students who use laboratory chemical and biological agents. Separate procedures are in place for hydrofluoric acid (LR\_TS 305A, formaldehyde (LR\_TS 305B) and mercury (LR\_TS 305C) spills.

Radiation spillages are not in scope of this documentation. Users of radioactive materials must be trained in separate procedures.

## Responsibilities

In the event of a spillage the individual who caused the spill is responsible for the prompt and proper clean up. They are responsible for following correct procedures including the use of personal protective equipment. They must inform Health and Safety Co-ordinators (HSC) and local coordinators if a spill kit has been used and they must report any accidents. The School HSC, as delegated by the Head of School, is responsible for providing a local training programme for all staff, for confirming emergency procedures are established and for monitoring to ensure that high standards are maintained. Academic supervisors are responsible for ensuring that all group members under their direction are trained and aware of how to deal with spills correctly. They must also ensure the correct consideration has been made and recorded in risk-COSHH assessments. Local laboratory coordinators are responsible for highlighting spill kit locations during induction and for training users in this spills procedure. HSCs monitor to ensure procedures are followed and confirm spill kits are correctly maintained. Laboratory workers are responsible for understanding the nature of materials being used, completing training and following safe procedures at all times.

## Before commencing work

Pre-planning is essential. Before commencing work with chemical or biological agents laboratory workers must understand the properties of the materials being used and know how to deal with spillages. They must familiarise themselves with the spill kits available, including storage locations, and know which clean-up method to use.

Many spillages can be prevented by taking the following actions;

- Containers must be appropriate from the materials being used
- Firmly close containers but do not over tighten
- Plan movements before transporting and use suitable carriers if required
- Keep your work area clean and free from general clutter
- Do not place or store containers near the edge of work surfaces
- Only use suitable volumes/quantities for the activity being performed

## Spill response and kits available

### Chemical spill kits

Dealing with spillages can range from using laboratory tissue for minor non-hazardous material to using special kits. At all times the correct PPE must be used with a laboratory coat and disposable gloves a minimum and safety glasses, face masks, 'Marigold' gloves, etc. for hazardous material as described in the risk / COSHH assessment.

The following table provides guidelines on the type of clean-up kit required for different volumes:

Low volume	0-50 ml	lab tissue for most situations
Medium volume	50-200ml	non-hazardous material use lab tissue, toxic or hazardous material use chemical spill kit
Large volumes	up to 2.5 L	non-hazardous material use lab tissue, toxic or hazardous material use chemical spill kit

Disposable spill kits (one use only) provided within facilities are for the use of small scale spillages of liquid chemical and water based substances. Each kit comprises:

- 2x chemical sorbent material (Trivorex)
- 1x protective gloves
- 1x disposable dustpan and brush
- 1x disposable bag
- 1x bag tie
- 1x user instructions
- 1x hazard waste disposal label
- Emergency signage

### Biological spill kits

In areas where hazardous biological material are used special spill kits are available which include suitable biocides to make a spillage safe prior to clean-up.

### Spill kit locations

Laboratory workers must familiarise themselves with the location of the nearest spill kit in their area.

## Procedures – Chemical spill

A chemical spill may be minor (one that laboratory workers may clean up) or major (one that requires intervention by the HSC/H&SS/Security)

A **minor spill** is one in which ALL of the following conditions are met:

- the spill is in a laboratory
- the material spilled is known
- The properties of the material are known and the spillage procedure in the RA/COSHH is known or available.
- If a hazardous material, the volume spilled is less than 2.5L
- Appropriate PPE is available
- The necessary materials i.e. spill kit are available
- the spill kit is sufficient for the volume of the spill

- the individual is trained to use the spill kit

The individual can clean up the spill under these conditions

A **major spill** is one in which ANY of the following apply:

- someone has been injured or there is potential for injury
- a fire or explosion has, or is likely to occur
- the material spilled presents an immediate threat to human health or safety or the environment
- the spill is a hazardous chemical in a common area (e.g. hallway or stairwell)
- the material spilled is listed in appendix 1 and is greater than 2.5L
- the spill is of a specialist nature (formaldehyde, hydrofluoric acid or mercury) and there are no trained specialist responders present

A major spill will usually result in the immediate evacuation of the area, if not the entire building.

### **First actions for a minor spill**

- Move away from spillage and if required warn others to move away also
- In the event of personal contamination.
  - Wash contaminated skin for at least 15 minutes
  - Remove contaminated clothing as soon as possible
- Keep others away from spillage – cordon off area if necessary.
- Assess the situation once everyone is in a place of safety.
- If all conditions are met for a minor spill (see above) proceed with clearing up procedure (see below).

### **First actions for a major spill (NB. Separate procedures are in place for hydrofluoric acid, formaldehyde and mercury)**

- Move away from spillage and warn others to move away also
- In the event of a large spillage of solvent extinguish ignition sources as you leave the area.
- Once in safe location, call security x6300. They will alert H&SS and HSCs
- Alert local staff such as academic supervisors and laboratory co-ordinators (although Security will alert the HSC, do attempt to contact him/her also)
- Keep others away from spillage – cordon off area if necessary. If possible, put up notices 'Chemical Spillage- Do Not Enter'.
- In the event of personal contamination call for assistance to:
  - Wash contaminated skin for at least 15 minutes
  - Remove contaminated clothing as soon as possible. Bag it and dispose of as clinical waste.
  - If injury has occurred laboratory worker should seek help from qualified first aider
- Assess the situation once everyone is in a place of safety.
- Do not attempt to clear up a major spillage, until agreement has been reached with H&SS and HSCs. They will advise on correct procedures.

## Clearing up minor spills

- Check the risk-COSHH assessment for the chemical(s) spilt and decide what actions and precautions are necessary.
- Do not breathe noxious vapours. Keep out of the room until these have been dispersed.
- Avoid contamination with the spilt material. Avoid spreading the spill further.
- When a decision has been made that it is safe to approach, put on appropriate personal protective equipment. Lab coat and gloves are a minimum, but for larger spillages you may need safety glasses, or full face visor, and overshoes.
- Bring the spill kit to the area.
- Contain the spill at the boundary by using the Trivorex that is in the spill kit.
- Then cover the liquid with Trivorex and leave for 5 minutes.
- When free liquid has been absorbed use dustpan and brush to collect contaminated material and transfer into plastic bags or a suitable container. Appendix 2 demonstrates the procedure.
- For powdered chemicals which are hazardous by inhalation (and do not react with water) wet tissue and place over powder, wipe up and transfer to plastic bags or a suitable container.
- Seal bags by tying the tops.
- Wash and wipe down contaminated surfaces with tissues and copious amounts of water to remove all traces of spilt chemical.
- Allow floors to dry before restarting work.
- Dispose of contaminated waste via standard chemical waste streams. In some cases it may be necessary to allow chemicals to evaporate in a fume cupboard before disposal by chemical waste route.
- Wash dustpan and brush and any non-disposable protective equipment with water as appropriate and allow to dry before replacing.
- Ensure that the spill is reported and complete an online accident report if necessary.
- Inform the HSC as the spill kit will need to be replenished.

## Procedures – Biological spill

- Avoid contamination with the spilt material. Avoid spreading the spill further.
- When a decision has been made that it is safe to approach, put on appropriate personal protective equipment. Lab coat and gloves are a minimum, but for larger spillages you may need safety glasses, or full face visor, and overshoes.
- Cover the spillage with tissues and soak these with suitable biocide disinfectant.
- Allow sufficient time for the disinfectant to have an effect (30 mins +).
- Collect the tissues into clinical waste bags or autoclave bags as appropriate.
- Swab the affected surfaces, using tweezers, with further biocide disinfectant-soaked tissues and dispose into clinical waste bags or autoclave bags as appropriate.
- Wash the area with clean water and allow to dry.
- Place waste bags into clinical waste stream or autoclave as appropriate.
- Wash any non-disposable protective equipment with water as appropriate and allow PPE to dry before storage.

## Appendix 1 Chemicals at greater than 2.5L that fall into the major spill category

Hydrofluoric acid (specialist spill see LR\_TS 305 A)

Formaldehyde (specialist spill see LR\_TS 305 B)

Mercury (specialist spill see LR\_TS 305 C)

Acetone

Acetonitrile

Chloroform

Dichloromethane

Diethylether

Ethanol, methanol, isopropanol

Ethyl acetate

Glacial acetic acid

Hexane

Histoclear

Hydrochloric, Nitric and Sulphuric acids

Mercaptoethanol

Phenol

Petroleum ether

Tetrahydrofluorane

Toluene

Turpentine

## Appendix 2 Use of Trivorex in the event of a spill

