



Hazardous Substance Spills Management - University Arrangements



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Hazardous Substance Spills Arrangements

1. What is a hazardous substance spill?

A hazardous substance spill is an unintentional release of a substance out of its container or vessel.

For the purposes of this document, ‘hazardous substance spill’ will be referred to as ‘spill.’

Spills create an immediate slip hazard. Spills of hazardous substances have potentially greater consequences as there is a risk of exposure to the hazardous substance(s) either through inhalation or skin contact.

This guidance covers the set-up of suitable local arrangements for dealing with spills of hazardous substances and the associated clean-up.

2. Business Unit Arrangements

Each Business Unit that stores or handles hazardous substances should appoint a Spills Coordinator and have local arrangements for dealing with a spill. It is expected that the Spills Coordinator will develop the Business Unit Arrangements. Large and complex business units may opt to appoint multiple Spills Coordinators but there must be a consistent approach to implementation of these arrangements within each BU.

Spills can be classified as a minor spill or a major spill and the potential type of spill must be identified in the Business Unit arrangements. Minor spills can be dealt with in house by the Business Unit. Major spills will require the use of an external competent contractor.

Business Unit arrangements, shall include elements such as (not an exclusive or exhaustive list):

- The name and contact details of the Business Unit Spill Coordinator(s)
- Details of where the chemical inventory is held for the Business Unit
- The types of spill and locations that could occur in the Business Unit (Minor / Major). Ensure you consider all Business Unit activities, including stores, waste stores and transport, which may be away from your main activities but involve the use and handling of hazardous substances
- Training needs for staff and students handling hazardous substances and how it will be fulfilled

- Who will be involved in clearing up a spill and therefore require Spill Responder training, including a schedule of exercises/drills to practice the procedure(s)
- Any specific first aid requirements and arrangements for training of first aiders
- The PPE required during a spill response and where this PPE will be stored
- The availability and location of spill kits, the arrangements for regular stock checks and the process for replenishment after use of the contents
- Identification and marking of evacuation zones where deemed necessary
- Any access controls and, if available, any ventilation controls
- Identification and marking of the containers needed for disposal after a clean-up and the process for disposal of hazardous waste.

It is expected that the Spills Coordinator will coordinate the above on behalf of their Business Unit.

3. Minor Spill

A minor spill is one in which all the following conditions are met:

- The spill is identified as minor in the Business Unit Arrangements
- A risk assessment is in place for use of the hazardous substance, which identifies emergency spill, clean-up and first aid requirements
- The identity of the hazardous substance(s) in the spill is/are known to the people dealing with the spill
- An appropriate spill kit is readily available and appropriate for the size and nature of the spill
- The individual(s) at the site of the spill is/are trained to use the spill kit and are confident to respond to the spill
- Any identified PPE is available and, where including close-fitting respiratory protective equipment, face-fit testing has been completed and training provided
- Special user training is provided where identified as a requirement in the Business Unit Arrangements.

4. Major Spill

A major spill is one where the Business Unit Arrangements are deemed insufficient to deal with the spill in one or more of the following ways:

- A fire or explosion has occurred, or is possible e.g. spill involving significant volumes of flammable substances, pyrophores or oxidants
- The spill presents an immediate threat to human health or the environment e.g. substantial quantities of corrosives, toxics, CMRs, or environmentally hazardous substances
- Local resources and competency are not sufficient to deal with the quantity spilt
- The spill is in a communal area (e.g. hallway or stairwell) and is of such a size/nature that the person(s) responding judges that they require significant assistance to manage the scene.

For major hazardous substance spills, it is expected that business units will call in the services of an appropriate competent third party. Details of who the business unit will call should be included in the business unit arrangements. (Contact h&s@nottingham.ac.uk for details.)

5. Risk Assessment

Each Business Unit that stores or handles hazardous substances must ensure that up-to-date risk assessments are available for the activities involving hazardous substances. Risk assessments should detail the location and volumes used and the potential for spills must be considered when developing the Business Unit arrangements. The emergency, clean-up and first aid requirements must also be considered, especially where these are different to the standard arrangements.

It is expected that the university's standard templates are used for recording the risk assessments.

6. First Aid

Each Business Unit should have an appropriate number of first aiders as identified in their first aid risk assessment.

First aiders should be trained to deal with any physical injury/ill-health issues identified in the risk assessments and Business Unit Arrangements.

Specific additions to standard first aid may include:

- Anti-dote for substances such as Phenol and Hydrofluoric Acid
- Oxygen therapy
- Chemical washing agents such as Diphoterine

7. Spills Kit Provision

A suitable number of spill kits proportionate to the risk, type of chemicals and volumes being used shall be provided in each Business Unit. These spill kits should be placed outside of the lab / workshop area and be subject to monthly checks. The location of spill kits and who will undertake the monthly checks, should be identified in local Business Unit Arrangements.

The composition of the spill kit shall be based on risk assessments.

Suggested items to be considered for a spill kit:

- **PPE**
 - Chemical-resistant safety gloves (appropriate for the kind of chemicals in use)
 - RPE (respiratory protective equipment/dust mask) – consider type and filter required
 - Safety goggles
 - Disposable Tyvek suit – non-adsorbent
 - Enclosed footwear or overshoes
- **Equipment**
 - Brooms, plastic dustpan and brush, and square-mouth shovel to collect the absorbent material (spark-resistant equipment when flammables involved).
 - Plastic tongs/scoops to pick up contaminated absorbent material.
 - A chemical resistant bin with a close-fitting lid to hold the volume of spill and absorbent residues prior to disposal.
 - Heavy-duty plastic bags or clinical waste bags for wrapping contaminated PPE
 - Absorbent material, pads, and pillows / rolls.
 - Absorbent powder/granule
 - Consider acid/alkali neutraliser
 - Consider availability of disinfectant for biological spills
 - Drain covers
 - Plug-in putty

8. Training and Competency

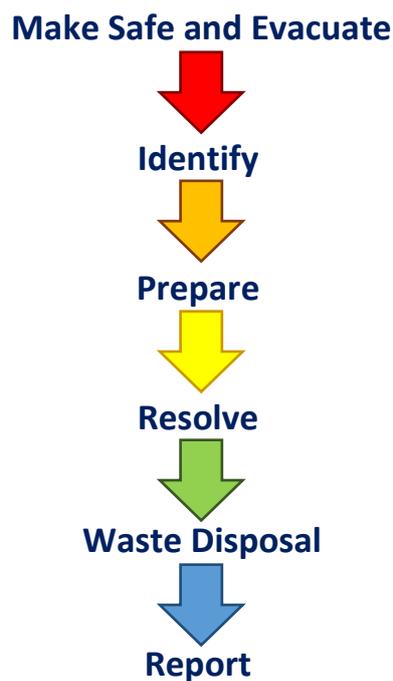
Everyone working with or exposed to hazardous substances must receive basic spills awareness training. This is currently provided through eLearning, available on the H&S Department website.

The Business Unit Spill Coordinator is expected to attend the UoN Spill Training Train the Trainer course and to deliver Responder Spill training to spill responders in the Business Unit as required.

Anyone responding to a spill must be trained and competent to deal with the types of spill that are foreseeable in their Business Unit. All Responders will require the following training in addition to basic awareness training:

- Responder Spill Training (Delivered by the Business Unit Spill Coordinator)
- Training on the types of spill likely to happen in the Business Unit (Delivered locally to an SOP / Business Unit Arrangement)
- Training on the use of the PPE identified for dealing with a spill in the Business Unit (Delivered locally to an SOP)
- Annual spill drills and spill response practice (delivered locally to an SOP / Business Unit Arrangement by the Spill Coordinator)

9. Spill Response – step-by-step approach



Make Safe and Evacuate

The priority in the event of a spill is to protect human health so considering the hazards of the substance is crucial.

If a spill occurs, you should contain the spill if safe to do so, e.g.

- Cover a sink with a drain mat, especially if the substance being used is toxic to aquatic life

- Right a bottle that has been knocked over or dropped
- Switch off equipment if the leak is associated with equipment failure.
- Evacuate the area and evaluate the significance of the spill and what is required to clean it up. The area should be secured at this time to prevent access and exposure, as specified in the Business Unit Arrangements.

Identify

You need to identify what has been spilt and what the hazardous properties are of the spill. This should be clearly identified in the risk assessment, but other useful information can be found in the manufacturer's Substance Data Sheet and from end users.

You should consider the hazards to human health, the environment, and the risk of creating an explosive atmosphere when evaluating a spill, and you should also consider the risk from the presence of incompatible chemicals.

Use a dynamic risk assessment template to record your assessment of the situation.

[\(Dynamic RA template available.\)](#)

Prepare

The spill responders, as identified in the Business Unit Arrangements, should prepare to deal with minor spills by:

- Assessing the size and nature of the spill
- Bringing the appropriate spill kit(s) to the area
- Donning the appropriate PPE – gloves, eye protection, lab coat/overalls, overshoes and RPE if required as identified in your Risk Assessment and Business Unit Arrangements
- Considering and controlling ignition sources, do not turn electrical equipment on and off unnecessarily as this can create an ignition source (spark)
- Preventing the spread of fumes, dusts, and vapours by shutting the doors to other areas
- Ventilating if the option is available and safe to do so.

Resolve

Proceed to control and clear up spill in line with Business Unit Arrangements:

- Contain the spill using booms/pillows
- Work from the outside of the spill to absorb substance
- Place recovered adsorbents into the designated chemical resistant container/bag.

If unable to follow the standard procedures for spills, do not proceed and carry out further assessment.

Waste Disposal

Waste should be safely contained in a 30-litre burn bin or other suitable solid receptacle based on the nature of the spill and disposed of via the hazardous waste route.

Consideration should be given to the disposal of contaminated PPE which may also need to be disposed of as hazardous waste. Reusable PPE will need to be decontaminated if possible; if this is not possible it must be disposed of as hazardous waste.

Report

All spills must be reported on the university's Incident Reporting System and any exposures to a pathogen or carcinogen, mutagen or substance toxic to reproduction must be reported on the person's health record via Occupational Health.

The Business Unit should identify in their arrangements, the process for restocking PPE, spill kit contents and first aid, and ensure this process is followed after each incident.

10. Spill Prevention

The following factors, in relation to management of hazardous substances, are important considerations in minimising the likelihood of hazardous spills:

Purchase

- Only purchase quantities enough for the purpose for short- and medium-term work
- Where possible chemicals should be bought in break-resistant packaging e.g. plastic or double-contained
- Where larger volumes are required, efforts should be made to buy multiple small packs rather than a large one to avoid a large spill.

Use

- Regular inspection of the integrity of containers shall be carried out by users.
- High standards of housekeeping help reduce spills
- The smallest practicable volumes shall be used for chemical reactions
- Glassware should be checked for cracks and damage before use
- Appropriately sized glassware shall be used for chemical reactions to avoid splash-spills
- Ground glass joints must be compatible and shall be appropriately clamped
- All reactions requiring external energy e.g. heat, microwaves or stirring etc. shall be appropriately clamped
- All work involving hazardous chemicals, where practical, should be carried out inside a fume cupboard

- Mechanical devices such as pumps, funnels, dispensers, and tilt measures shall be used for work requiring regular transfer of material from large packaging to working solutions.

Storage

- Each Business Unit should maintain a chemical inventory. The University system is ChemInventory
- Hazardous substances should be stored safely and securely inside a building in a dedicated area, taking all reasonable precautions to prevent uncontrolled releases, leaks, spills, or cross contaminations. These precautions should include drip trays, bunding, double containment or secure lids, as appropriate to the nature and volumes of the substances
- Incompatible chemicals must not be stored together
- Sturdy shelves and properly designed storage areas shall be used to minimise collapse, breakage, and tipping
- All large containers shall be stored as close to the floor as possible
- Shelves storing chemicals must not be overcrowded and storage on the edge must be avoided
- If possible, 'lipped' storage shelves shall be used to reduce the risk of a bottle falling
- Highly hazardous chemicals, such as toxic chemicals and CMRs, must be stored securely, e.g. in a locked cupboard or Fridge / Freezer.

Transport

- Transport of chemicals outside the University (including between campuses) should be minimised and be carried out only after seeking appropriate advice from the Business Unit Health and Safety Coordinator and in accordance with ADR/IATA Regulations
- All transport of chemicals within and between university buildings shall take place in bunded trolleys suitable for the chemical being transported, where bottles are transported partition holders are recommended
- Spill kit materials need to be available when transporting materials outside of the building and should be considered in your Business Unit arrangements
- Individual glass bottles shall be carried in an appropriate bottle carrier and, where possible, inside a secondary container.