

STANDARD OPERATING PROCEDURE

Emergency Spillage Procedure

- Policy** The University of Sussex has issued The Control of Hazardous Substances Policy which applies to all University of Sussex Staff (Including visiting academics), students and contractors employed by the university. Line Managers and supervisors are required to reduce as much as possible exposure to Hazardous Substances. The policy also requires outlining emergency actions in the event of an accident or spill.
- Purpose** The document outlines the Emergency Procedure for Chemical Spillages that set up good practices to deal with Chemical Spillages and prevent exposure to hazardous substances.
- Scope** This procedure applies to the Science Schools. This procedure covers all chemical substances but does not apply to Biological Hazards and Radioactive Material.
- Responsibilities** Line managers would be responsible for providing the information, instruction, and training to any staff member in contact with Substances Hazardous to Health. They would be responsible for distributing the Emergency Spillage Procedure and ensuring their employees understand the information provided before starting their work. Safety Arrangements (Spillage Kits) or any control measures stated in the Risk Assessment should be in place, accessible at all times, and checked regularly.
- Health and Safety Department would oversee the execution of the University Policy and provide appropriate and sufficient advice when required.

Introduction

Whether the guide below is followed, or whether the laboratory members clean up the spill, it must be a matter of judgement and depends on the chemical spill. For example, 10mL of some substances can be extremely hazardous and require evacuation. Flammables such as ethanol, which may in general be regarded as non-toxic, can present a serious fire hazard if spilled in any quantity.

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Author	Alex Fenn / Francisco Van Ronzelen	Reviewed by	Sharon Tighe	Department	Science Schools' Health & Safety Department

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General Action Plan:

After detecting a spill:

1. Inform other people in the area of the problem.
2. Evacuate the area immediately, making sure others leave with you.
3. Raise the alarm, contacting the local safety officer. If causality is involved in the event, or there is a potential risk of fire or explosion, call security at 3333 (01273 873333 from an external or mobile phone).
4. Prevent others from entering the affected area. If possible, install appropriate signage to warn others, including the spillage's nature.
5. Should anyone be contaminated, follow the directions of the emergency first aid code.
6. Remain available to provide information but do not put yourself at risk.

Key Points

- **DO NOT** touch any electrical equipment, including light switches. Sparks can cause an explosion.
- **DO NOT** put yourself in any unnecessary risk. Remember that certain chemicals could cause loss of consciousness, which might not allow you to escape safely.
- **DO NOT** initiate any emergency procedure if unsure of the process.
- **DO** Provide information about the location of the spillage, quantity, and the name of the substance (if known).
- **DO** immediately remove any potentially contaminated clothing and use the nearest emergency shower. You must seek medical treatment even if there is no noticeable damage.

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Substance containment and removal

The procedure for removing spillages should only be followed by trained operatives (Safety Officers, Technical Services, Line Managers).

DO NOT attempt to follow the procedure if you have not received appropriate training or if you do not feel confident about handling the situation.

1. **Risk Assess the situation.** Ensure you understand the substance characteristics by reading the Safety Data Sheet and COSHH Risk Assessment. This should consider the following:
 - Quantity of the substance
 - Chemical characteristics and health hazards.
 - Risk of toxic atmosphere, oxygen depletion or explosive atmosphere.
2. **Ensure you have appropriate Personal Protective Equipment (PPE).** At a minimum, you should have:
 - Protective Clothing (Chemical Resistant)
 - Chemical Resistant Gloves
 - Safety Glasses
 - Respiratory Protective Equipment (RPE) if the substance is highly volatile and toxic. The filters on the RPE must be checked to ensure they will capture the substance.
3. **Prevent the spread of liquids, dust, and vapours.**
 - When cleaning a spill, first stop the source of the spillage to prevent the spill from growing any further. If a container has fallen over, put it standing correctly, or if a tap has been left open, close it. If there is a risk of the spill going down a drain, cover them with a mat.
 - If the substance is volatile or can produce airborne dust, close the laboratory door and increase ventilation (through fume hoods, for example) to prevent the spread of dust and vapours to other areas.
 - If leakage in a particular system causes spillage, ensure the system is off and use temporary diking, sandbags, dry sand, earth or proprietary booms/absorbent pads to prevent the spread of the material to other areas.

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4. Stabilisation/dilution to a safe condition

- Once the material is contained, it should be treated wherever possible to render it safe. Acids and alkalis may be treated with appropriate neutralising agents. Due to the differing properties of the various groups of chemicals, an appropriate treatment strategy with suitable chemicals should be established in each case. For example, highly concentrated hydrochloric acid will fume when spilled, so the spill should be diluted with a gentle water spray before neutralisation.
- Neutralisation could cause splashes or yield large amounts of heat. Be careful during this process.
- As a guide, you can neutralise acids with soda ash or sodium bicarbonate and bases with citric acid or ascorbic acid.
- Check the area with pH paper to determine if the substance has been neutralised successfully.

5. Absorb the liquid.

- Use the absorbent spill kit, working from the spill's outer edges. Surround the spill with the socks and booms, and then push them inwards towards the centre of the spill until it has been completely absorbed. Special absorbents are required for chemicals such as hydrofluoric and concentrated sulfuric acids. Check the Safety Data Sheet to ensure you have the appropriate kit.
- When cleaning the spill, ensure there has been no unnoticed runoff during the cleaning process so that all spilled material has been cleaned.
- Continue using sorbents until the spill has been completely absorbed. For safe disposal, sorbents containing the spilled substance should be placed in heavy-duty hazardous waste sacks.

6. Collect and contain the clean-up residues.

- The neutralised spill residue or the absorbent should be scooped, swept, or otherwise placed into a plastic bucket or other container.
- Hazardous materials in a fine dusty form should not be cleared up by dry brushing. Vacuum cleaners fitted with appropriate filters should be used in preference to avoid dust generation.

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- Residues should be placed in plastic bags. Additional packaging must be required before they can be transported to the waste disposal area.
7. **Waste disposal.** Keep the materials away from the general waste stream. Ensure you transfer the residues to a Chemical Waste Disposal area. If you are unsure, please get in touch with the Science Schools' Health & Safety Department at safetyscienceschools@sussex.ac.uk
8. **Decontaminate the area and the affected equipment.**
- Ventilating the spill area may be necessary. Open windows or use a fan unless the site is under negative pressure.
 - Wash the affected area with plenty of water using a mop or sponge.
 - Where the spill occurred, replenish all the equipment used when containing the spill. Please get in touch with the Science Schools' Health & Safety Department at safetyscienceschools@sussex.ac.uk
9. **Report the incident.** A report should be made to the university incident reporting form after a spill has been cleaned and the area is safe. Follow the guidelines for reporting found at [Incident Reporting](#)

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Special Precaution

1. Flammable Liquids and Volatile Toxic Compounds

- Remove all potential sources of ignition.
- Flammable liquids are best removed through spill pillows or pads.
- All used absorbent materials should be placed in heavy-duty poly bags, which are then sealed, labelled, and disposed of through your facility's hazardous waste management program.
- Make sure the spill area has been adequately ventilated to remove flammable vapours.

2. Direct Contact Hazards

- Select appropriate personal protective equipment with a proper breakthrough time and compatibility with the substance you are clearing up.
- Make sure all skin surfaces are covered.
- PPE could include two sets of gloves: a primary barrier and a second barrier as a thin inner liner to protect you in the event the primary barrier fails.

3. Mercury Spillage

Mercury spills rarely present an imminent hazard unless the spill occurs in an area with extremely poor ventilation. The main exposure route of mercury is via vapour inhalation. Consequently, if metallic mercury is not cleaned up adequately, the tiny droplets remaining in surface cracks and crevices may yield toxic vapours for years.

- Cordon off the spill area to prevent people from inhaling the substance.
- **DO NOT** use a regular vacuum cleaner because you will only disperse toxic vapours into the air and contaminate your vacuum cleaner.
- First, use an appropriate suction device to collect the big droplets and a special absorbent to amalgamate smaller mercury droplets.
- Mercury Spills should be prevented. The use of mercury should be restricted and substituted. If the substitution is not available, the equipment using mercury should be used with spillage trays to provide appropriate containment.

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