# TITLE: LOCAL RULES FOR WORKING IN LABORATORIES

<table>
<thead>
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<th>Reviewed by:</th>
<th>Date</th>
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<tr>
<td>Health and Safety Co-ordinators</td>
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<table>
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<tr>
<th>Authorised by:</th>
<th>Date</th>
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<tr>
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<td>June 2021</td>
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<td>Director of Technical Services</td>
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<table>
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<tr>
<th>Revisions</th>
<th>Date</th>
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<tr>
<td>Minor revisions and inclusion of additional warning symbols. Review by Technical Managers and Laboratory Co-ordinators</td>
<td>June 2021</td>
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<tr>
<th>Next review</th>
<th>Date</th>
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<td>June 2024</td>
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1. **Purpose**

In order to reduce risks to health through exposure it is important that all laboratory activities are performed in a way which minimises potential risk. The following procedures are in place to provide a safe working environment and should be followed at all times.

2. **Scope**

This document is intended for all categories of staff, students and visitors who work within laboratory environments whether it’s within their own School or another. Everyone has a responsibility to work safely for their own protection and that of others.

3. **Risks**

Scientific investigation often necessitates the use of hazardous biological and chemical agents, laboratory equipment, cryogens, sharps and gases. Therefore by working in laboratory environments there is the possibility of exposure to:

- Chemicals (irritant, harmful, corrosive, toxic, oxidising, flammable, carcinogenic etc.)
- Biological agents (bacteria, viruses, human and animal tissue, plants, fungi, Insects, etc.)
- Genetically modified organisms (GMOs)
- Radiation and X-rays
- Lasers
- Physical risks from items such as sharps, high pressure cylinders, extremes of hot or cold and scientific equipment such as Freezers, Hot-air Ovens, Hot Plate Stirrers, Centrifuges, Cryostat/ Section cutter (Microtome) and Electrophoresis packs.

4. **Procedure**

4.1 **General**

- Always conduct yourself in a professional manner. Take note of door signage and comply with access restrictions (Door Signage: Appendix 1a) and understand the general hazards within the laboratory (Door Signage: Appendix 1b).
- Laboratory coats must always be worn and fastened correctly.
- Wear the correct PPE for each activity as described in the risk assessment.
- Do not take drink or food products into laboratories. Eating and drinking is forbidden.
- Familiarise yourself with hazard warning symbols associated with chemicals and gas cylinders within the laboratory and understand what they mean. (See appendix 2)
- Do not leave equipment running without ensuring safe operation (See Appendix 3).
- Familiarise yourself with spillage and decontamination procedures. Any spillage should be cleared immediately, including dry powders on balances.
- Make yourself aware of the trained first aiders and the locations of first aid boxes, including specialist provision, and eye wash bottles. See local safety notice boards for information.
- Make yourself aware of fire escape routes and what to do in the event of a fire alarm. See local safety notice boards for information.
- Keep benches and floors clean and tidy, good housekeeping is essential.
- Cover cuts and abrasions with a waterproof dressing.
- Never mouth pipette or chew pens/pencils.
- Never store personal belongings, e.g. bags and coats, in laboratories.
- Never leave combustible rubbish where it can easily be set alight, e.g. in corridors, on benches and near naked flames like Bunsen Burners.
4.2 Before work

- Wear suitable clothing and PPE for laboratory work (refer to section 6)
- Never begin an activity without being trained and understanding the complete procedure. You should always:
  - Read, understand and sign the risk and COSHH assessments.
  - If applicable write a risk assessment. Source Safety Data Sheets for the hazardous substances you will be using.
  - Read, sign and understand related Local Rules and SOPs.
  - Attend any specialist training courses.
- Receive practical training for equipment to be used.
- Check that you have everything that is required to perform the complete activity, i.e. make sure you have enough reagents and consumables.
- Check that you have the correct storage conditions and waste disposal routes for all materials.

4.3 During work

- Always use relevant control measures, i.e. fume cupboards and safety cabinets, as indicated in risk/COSHH assessments.
- Always use the correct PPE e.g. suitable gloves and safety glasses, as described in the risk/COSHH assessment.
- Do not leave procedures involving hazardous chemicals or biological agents unattended. If equipment which has a higher risk of causing harm to persons or facilities is to be left running unsupervised then ‘Please leave running’ instruction cards should be completed and attached in case of emergency. See appendix 3.
- Place all used sharps and needles directly into designated sharps containers, never re-sheath a needle.
- Avoid cross contamination, remove gloves when opening door handles etc.
- Do not wear headphones so you can remain vigilant of the dangers around you and hear all emergency alarms. The use of mobile phones is discouraged.
- Label all solutions with the name of the owner, date and name of chemical or biological contents. Where very hazardous solutions have been prepared the relevant hazard labels must also be added in case of emergency. See appendix 2.
- After Work areas should be left clean and tidy; good housekeeping is essential.
- Return all chemicals and apparatus to the correct storage locations. Flammable solvents must be stored correctly, with no more than 500ml stored outside of a flammables cabinet.
- Make waste materials safe and dispose via the correct route. See relevant TS_LR 401 for Disposal of Laboratory Waste
- Wipe any contaminated surfaces with a suitable cleaning agent.
- After use all PPE such as a face mask or cryogenic gloves should be stored correctly.
- Wash hands when leaving the laboratory at completion of work.

5. ‘Outside normal hours’ and lone working

Normal working hours at the University are 08:00 – 18:00 Monday to Friday (excluding closure dates and bank holidays). Check the School Health and Safety Code for any differences. All other times are classed as outside normal hours and only activities which are lower risk are permitted during this time.

If high risk work is contemplated then it must not be conducted alone and form part of the risk assessment process to ensure that the work can be carried out safely. See appendix 4 for examples of low and high risk hazards.
It is MANDATORY that high risk work is conducted in pairs with a responsible person in case emergency assistance is required. A responsible person is classed as a member of academic, academically-related or technical staff.

Supervisors are responsible for ensuring the student/member of staff is competent to work alone and request the WONHv1 form available from the Health and Safety Co-ordinator (HSC).

Laboratory equipment may only be left running if deemed safe and "Please Leave Running" notices are attached to the outside of the main door of the room containing the equipment. See Appendix 2. Equipment left running must fail safely if there is an interruption of main services. This does not apply to refrigerators and temperature controlled cabinets.

6. Personal Protective Equipment (PPE)

PPE is equipment that will protect you against health and safety hazards. It includes items such as laboratory coats, gloves, eye protection and respiratory protective equipment along with other task specific items.

PPE should only be used as a last resort as other control measures, such as fume cupboards and safety cabinets, should be the implemented or the activity changed to remove the necessity. Where personal protective equipment in a laboratory is mandatory (as indicated by mandatory door or area-specific signage - Appendix 1) the item of PPE must be worn at all times in that area.

Only PPE which is approved and displays the relevant CE mark, in accordance with the PPE Regulations 2018 should be used. If in doubt, speak with the School Health and Safety Coordinator (HSC) for guidance.

All PPE should fit comfortably and not restrict movement or cause any loss of dexterity. It should be used correctly with training provided as required, for example how to remove disposable gloves without contaminating the skin.

Any damaged or defective items are not permitted to be used and should be reported to the Laboratory Co-ordinator and replaced.

PPE must be cleaned, stored safely and inspected carefully before each use to ensure it is in a usable condition. Laboratory coats must be kept clean – check the local arrangements for them to be laundered with the Laboratory Co-ordinator.

Clothing must minimise exposed skin and footwear that covers the whole foot must be worn. Open toed sandals, and flip flops are not acceptable. You will be asked to leave the laboratory until suitably attired.

7. Accidents and Emergencies

Immediately seek appropriate help in an emergency, e.g. first aider or fire warden, whose names are displayed on local signage and the safety notice board, or security.

Report accidents immediately and notify your supervisor and HSC.

All spillages must be dealt with promptly. Details of how to treat spillages can be found in your COSHH/Risk Assessment. See also TS_LR 305 Dealing with Laboratory Spillages.
8. Associated documents

- Local Rules and SOPs (See Section 9)
- Health and Safety Services; Codes of Practice, safety guides and related documents (available from H&SS website).

9. Training

The member of staff/Student must have read and understood this document and any associated documents before carrying out any work in the laboratory. Training is provided by a competent person and is accompanied by familiarisation with Local Rules, Risk/COSHH assessments and SOPs.

The following Local Rules are available for specific guidance on safety critical equipment:

- TS_LR 302 Use of Fume Cupboards
- TS_LR 303 Use of a Microbiological Safety Cabinet Class II
- TS_LR 305 Dealing with Laboratory Spills
- TS_LR 401 Disposal of laboratory waste
- TS_LR 308 The Safe Use of High Speed Centrifuges
- TS_LR 309 The Safe Use of Ultracentrifuges
Appendix 1a: Door Signage. Laboratory Access (taken from University Safety Note 56)

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>Limited Access</td>
<td>Only authorised members of staff and students are allowed to enter Limited Access laboratories.</td>
</tr>
<tr>
<td>Restricted Access</td>
<td>Entry is restricted. Access is allowed for named, authorised personnel only.</td>
</tr>
<tr>
<td>Highly Restricted Access</td>
<td>Entry is highly restricted. Access is allowed for named, authorised personnel only.</td>
</tr>
</tbody>
</table>

- Non-laboratory staff should not enter unless accompanied by an authorised person.
- Service engineers and maintenance staff should be directed to the Laboratory Coordinator in order to arrange a permit to work.
- Cleaners are only permitted to clean the floors and empty waste paper bins in laboratories. They are not allowed or trained to clean laboratory benches or move equipment.
- Entry is restricted. Access is allowed for named, authorised personnel only.
- Additional authorisation is required to enter.
- Separate local rules and training requirements apply.
- Permit to Work from HSC, or authorised persons such as RPSs required for all works, including maintenance, equipment servicing and cleaning.
- Entry is highly restricted. Access is allowed for named, authorised personnel only.
- Additional authorisation is required to enter.
- Separate local rules and training requirements apply.
- Permit to Work from HSC, including area decontamination certificate, is required for all works, including maintenance, equipment servicing and cleaning.

Children and young person’s visiting the University:

Young children (<12 years old) must not be taken into or allowed to enter ‘higher hazard’ areas such as laboratories or workshops.

Older children (12 - 16 years of age) may be allowed to enter laboratories or workshops for ‘educational’ purposes, if under direct supervision and when no hazardous work is being undertaken.

Young persons (16 - 18 years old) may be allowed to enter laboratories or workshops for "educational" purposes under direct supervision by a responsible member of staff.
## Appendix 1b: Door signage - General hazard and chemical hazard warning symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Biohazard" /></td>
<td>Biohazard</td>
<td>Use of bacteria, virus or fungi at either Hazard Group 1 or 2</td>
</tr>
<tr>
<td><img src="image" alt="Compressed Gas Cylinder" /></td>
<td>Compressed Gas Cylinder</td>
<td>One or more gas cylinder in place</td>
</tr>
<tr>
<td><img src="image" alt="General Hazard" /></td>
<td>General Hazard</td>
<td>Presence of either a range of general laboratory hazards or a noted hazard (specified on the symbol)</td>
</tr>
<tr>
<td><img src="image" alt="High Voltage" /></td>
<td>High Voltage</td>
<td>Presence or use of accessible high voltage sources</td>
</tr>
<tr>
<td><img src="image" alt="Laser hazard" /></td>
<td>Laser hazard</td>
<td>Presence of a laser system. The Class will usually be specified</td>
</tr>
<tr>
<td><img src="image" alt="Ionising Radiation" /></td>
<td>Ionising Radiation</td>
<td>Use of ionising radiation in the form of X-rays or other sources</td>
</tr>
<tr>
<td><img src="image" alt="Flammable Substances" /></td>
<td>Flammable Substances</td>
<td>Use and storage of flammable liquids, solids or gases</td>
</tr>
<tr>
<td><img src="image" alt="Corrosive Substances" /></td>
<td>Corrosive Substances</td>
<td>Use and storage of corrosive liquids and/or gases</td>
</tr>
<tr>
<td><img src="image" alt="Toxic Substances" /></td>
<td>Toxic Substances</td>
<td>Use and storage of toxic liquids, solids or gases, including possible poisons</td>
</tr>
<tr>
<td><img src="image" alt="Oxidising Substances" /></td>
<td>Oxidising Substances</td>
<td>Use and storage of oxidising liquids, solids or gases</td>
</tr>
<tr>
<td><img src="image" alt="Strong Magnetic Fields" /></td>
<td>Strong Magnetic Fields</td>
<td>Use of equipment generating or requiring strong magnetic fields</td>
</tr>
<tr>
<td><img src="image" alt="Explosive Atmosphere" /></td>
<td>Explosive Atmosphere</td>
<td>Substances and procedures carried out mean there is the possibility of explosive atmospheres forming</td>
</tr>
<tr>
<td><img src="image" alt="Cryogenic Substances" /></td>
<td>Cryogenic Substances</td>
<td>Use or storage of cryogenic liquids and/or solids</td>
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### Appendix 2. Hazard warning symbols

<table>
<thead>
<tr>
<th>HAZARD SYMBOL</th>
<th>DESCRIPTION OF HAZARD</th>
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<tbody>
<tr>
<td><img src="image" alt="Harmful" /></td>
<td><strong>Harmful</strong>&lt;br&gt;Chemicals that may cause harm to health including irritation or sensitisation to the skin.</td>
</tr>
<tr>
<td><img src="image" alt="Corrosive" /></td>
<td><strong>Corrosive</strong>&lt;br&gt;Chemicals that may destroy living tissue on contact.</td>
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</table>
| ![Highly flammable](image) | **Highly flammable**<br>Chemicals that may catch fire in contact with air, only need brief contact with an ignition source, have a very low flash point or evolve highly flammable gases in contact with water.  
**Extremely flammable**<br>Chemicals that have an extremely low flash point and boiling point, and gases that catch fire in contact with air. |
| ![Toxic](image) | **Toxic**<br>Chemicals that at low levels cause damage to health.  
**Very Toxic**<br>Chemicals that at very low levels cause damage to health.  
**Carcinogen**<br>Chemicals that may cause cancer or increase its incidence.  
**Mutagens**<br>Chemicals that induce heritable genetic defects or increase their incidence. |
| ![Oxidising](image) | **Oxidising**<br>Chemicals that react exothermically with other chemicals |
| ![Explosive](image) | **Explosive**<br>Chemicals that may explode. |
| ![Dangerous for the environment](image) | **Dangerous for the environment**<br>Chemicals that may present an immediate or delayed danger to one or more components of the environment. |
| ![Longer term hazards](image) | **Longer term hazards**<br>Reflects serious longer term health hazards such as carcinogenicity and respiratory sensitisation. |
| ![Gas cylinders](image) | **Gas cylinders**<br>Contains gas under pressure. |
Appendix 3. Please leave running card.

Available from Technical Staff
Appendix 4. Examples of Low and High Hazard Work

**Significant and high hazard work**

Examples of significant or high risk work include operations involving the use of:
- Flammable, toxic, corrosive or unstable chemicals,
- Radioactive substances,
- Biological hazards including human pathogens and laboratory animals;
- Vacuum lines, distillation and refluxing equipment, centrifuges, autoclaves, steam plant, high pressure equipment and gas cylinders;
- High voltage equipment;
- Lasers, X-ray and UV sources;
- Liquid Nitrogen
- Gas (and arc) welding, brazing and cutting equipment;

**Low hazard work**

Examples of low risk work are:
- Office work, reading, writing, drawing and marking;
- The use of microscopes;
- Routine plant examination and adjustments;
- Building cleaning operations in non-hazardous areas, such as corridors, foyers, toilets, etc