Environmental Sustainability and Health Institute

SAFETY STATEMENT

2017

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Approved by Name</th>
</tr>
</thead>
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<tr>
<td>0.1</td>
<td>November 2017</td>
<td>DIT Health &amp; Safety Office ESHI</td>
</tr>
</tbody>
</table>
IMPORTANT NOTE:

This safety statement and risk assessments have been prepared by the DIT Health & Safety Office and ESHI and are based solely on the information provided to the author(s) on the date of completion. If there is any inaccuracy, misstatement, omission or any other error of whatsoever nature contained herein, it is the responsibility of the relevant Academic Leader of ESHI to bring this to the immediate attention of the DIT Health & Safety Office.

Edel Niland
Health and Safety Officer
Date: 31/11/2018

Yvonne Mc Ardle
Occupational Health Officer
Date: 25.11.19

Jesus Frias
Academic Leader of ESHI
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ESHI CONTACT DETAILS

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<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Location</th>
<th>Email</th>
<th>Telephone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Leader of ESHI</td>
<td>Jesus Frias</td>
<td>GW.204</td>
<td><a href="mailto:Jesus.Frias@dit.ie">Jesus.Frias@dit.ie</a></td>
<td>+353 1 402 5410</td>
</tr>
<tr>
<td>Technical Officers</td>
<td>Aleksandra Ruliklowska</td>
<td>GW.204</td>
<td><a href="mailto:Aleksandra.Ruliklowska@dit.ie">Aleksandra.Ruliklowska@dit.ie</a></td>
<td>+353 1 402 8055</td>
</tr>
<tr>
<td></td>
<td>Natasha McCormack</td>
<td>GW.204</td>
<td><a href="mailto:Natasha.McCormack@dit.ie">Natasha.McCormack@dit.ie</a></td>
<td>+353 1 402 3113</td>
</tr>
<tr>
<td></td>
<td>Claudio Tersaruolo</td>
<td>GW.204</td>
<td><a href="mailto:Claudio.Tersaruolo@dit.ie">Claudio.Tersaruolo@dit.ie</a></td>
<td>+353 1 402 5334</td>
</tr>
<tr>
<td>ESHI Secretary/Administrator</td>
<td>Kevin Corbett</td>
<td>GW.204</td>
<td><a href="mailto:Kevin.Corbett@dit.ie">Kevin.Corbett@dit.ie</a></td>
<td>+353 1 402 5333</td>
</tr>
<tr>
<td>Nominee to ESHI Health and Safety Team</td>
<td>Claudio Tersaruolo/Aleksandra Ruliklowska</td>
<td>GW.204</td>
<td><a href="mailto:Aleksandra.Ruliklowska@dit.ie">Aleksandra.Ruliklowska@dit.ie</a></td>
<td>+353 1 402 8055</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><a href="mailto:Claudio.Tersaruolo@dit.ie">Claudio.Tersaruolo@dit.ie</a></td>
<td></td>
</tr>
<tr>
<td>Local First-Aiders</td>
<td>Natasha McCormack</td>
<td>GW.204</td>
<td><a href="mailto:Natasha.McCormack@dit.ie">Natasha.McCormack@dit.ie</a></td>
<td>+353 1 402 3113</td>
</tr>
<tr>
<td></td>
<td>Claudio Tersaruolo/Aleksandra Ruliklowska</td>
<td>GW.204</td>
<td><a href="mailto:Aleksandra.Ruliklowska@dit.ie">Aleksandra.Ruliklowska@dit.ie</a></td>
<td>+353 1 402 8055</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><a href="mailto:Claudio.Tersaruolo@dit.ie">Claudio.Tersaruolo@dit.ie</a></td>
<td>(Training completed in Nov 2017)</td>
</tr>
</tbody>
</table>

Please see ESHI Contacts for a full Listing:

EMERGENCY CONTACT NUMBERS

<table>
<thead>
<tr>
<th>Emergency Services</th>
<th>112/999 (You may need to dial “0” for an outside line)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>Mater Hospital (01) 803 2000</td>
</tr>
<tr>
<td>Contact</td>
<td>Phone Numbers</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>Dublin City Council</td>
<td>(01) 222 22 22</td>
</tr>
<tr>
<td>Garda Síochána</td>
<td>Bridewell Station (01) 666 8200</td>
</tr>
<tr>
<td>Bord Gáis 24 hour emergency line</td>
<td>1850 20 50 50</td>
</tr>
<tr>
<td>ESB 24 hour emergency line</td>
<td>1850 372 999</td>
</tr>
<tr>
<td>Health and Safety Authority</td>
<td>1890 289 389</td>
</tr>
<tr>
<td>Samaritans</td>
<td>1850 60 90 90</td>
</tr>
<tr>
<td>Environmental Protection Agency</td>
<td>1890 33 55 99</td>
</tr>
</tbody>
</table>

### ESHI & CAMPUS CONTACT DETAILS

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Phone Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Desk/Reception</td>
<td>The Greenway building does not have a front desk. Access is through student card. <strong>Front Desk - Rathdown House, Grangegorman</strong></td>
<td>(01) 402 4270</td>
</tr>
<tr>
<td>Incident Controller</td>
<td>Control Room - Orchard House</td>
<td>(01) 402 4206</td>
</tr>
<tr>
<td>Building Services Supervisor</td>
<td>Derek Bowden</td>
<td>402 4281 (087) 9404632 <a href="mailto:derek.bowden@dit.ie">derek.bowden@dit.ie</a></td>
</tr>
<tr>
<td>Building Maintenance Manager</td>
<td>Terry Maher</td>
<td>402 4523 (087) 1958120 <a href="mailto:terry.maher@dit.ie">terry.maher@dit.ie</a></td>
</tr>
<tr>
<td>Occupational Health Officer</td>
<td>Yvonne McArdle</td>
<td>01 402 4127 / 087 9809 135</td>
</tr>
<tr>
<td>Health &amp; Safety Officer</td>
<td>Edel Niland</td>
<td>(01) 402 4192/086 3891080</td>
</tr>
<tr>
<td>Student Health Centre</td>
<td>Linenhall, Bolton Street Aungier Street</td>
<td>01 402 3614 01 402 3051</td>
</tr>
<tr>
<td>Chaplain</td>
<td>Finbarr O’Leary</td>
<td>01) 4024308/ (01) 4024112; Mobile (087) 4169517</td>
</tr>
<tr>
<td>Employee Assistance Programme (EAP) Contact</td>
<td>VHI Corporate Solutions</td>
<td>Freephone 1800 995 955</td>
</tr>
</tbody>
</table>
## LIST OF PERSONS IDENTIFIED AS BEING RESPONSIBLE FOR HEALTH AND SAFETY TASKS

<table>
<thead>
<tr>
<th>TASKS</th>
<th>RESPONSIBLE PERSON</th>
<th>SIGNATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinating and ensuring records are maintained for training and provision of Personal Protective Equipment</td>
<td>Jesus Frias</td>
<td></td>
</tr>
<tr>
<td>Ensuring a safety statement and risk assessments are carried out, updated and communicated</td>
<td>Jesus Frias</td>
<td></td>
</tr>
<tr>
<td>Ensuring the upkeep of first-aid box and ordering first-aid supplies from Occupational Health Officer</td>
<td>Jesus Frias</td>
<td></td>
</tr>
<tr>
<td>Co-ordinating contractors activities and dealing with Estates Office for Work Permits</td>
<td>Derek Bowden</td>
<td></td>
</tr>
<tr>
<td>Updating the statutory registers and Safety Data Sheets</td>
<td>Jesus Frias</td>
<td></td>
</tr>
<tr>
<td>Ensuring adequate personnel designated as evacuation marshals and first-aiders</td>
<td>Jesus Frias</td>
<td></td>
</tr>
</tbody>
</table>
INTRODUCTION

DIT is required under the provisions of the Safety, Health and Welfare at Work Act 2005 ("the Act"), to have and bring to the attention of all employees, a statement of its policy, organisation and arrangements with respect to safety, health, and welfare at work. The purpose of the statement is to specify the manner in which the safety, health and welfare of employees shall be secured and managed. The Act also places obligations on DIT in respect of third parties who attend at DIT to ensure they are not exposed to risks to their safety, health and welfare.

The fundamental aim of the Act is the prevention of accidents and illnesses at the place of work.

This safety statement has been prepared in compliance with the Act and provides details of the specific hazards relevant to ESHI and the controls that have been implemented to adequately safeguard the activities.

This safety statement should be read in conjunction with the DIT Framework Safety Statement which is available on the health and safety website.

This document applies to all staff, students, visitors, contractors/service providers and campus users, and users of ESHI Research Institute facilities. It will be updated as necessary in the light of new legislation, staff feedback, changes and practical experience. In addition it will be reviewed annually. This safety statement is made publically available to allow all staff, students, visitors, contractors/service providers and campus users the opportunity to review and consult on a regular basis.

SAFETY POLICY & OBJECTIVE FOR ESHI

It is our intention to protect staff, students, visitors, contractors/service providers and campus users from accidents or ill health at a place of work. We will seek to ensure that all equipment, systems, and work practices do not constitute a risk to the health and safety of staff, students, visitors, contractors/service providers and all other parties. We will ensure that:

- Work activities are managed and conducted in a manner that ensures the safety, health and welfare of our employees, students, visitors and contractors/service providers;
- Our safety statement is maintained and updated and written risk assessments are carried out and reviewed as required and brought to the attention of all employees at least annually;
- Protective and preventative measures are put in place where necessary and implemented and maintained;
- Improper conduct likely to put an employee, student, visitor or contractor/service provider or other campus user’s safety and health at risk is prevented;
- A safe place of work is provided that is adequately designed and maintained;
- A safe means of access and egress to all places of work is provided;
- Safe plant and equipment are provided;
- Safe systems of work are provided;
- Risks to health from any article or substance are identified, amended and prevented;
- Appropriate information, instruction, training and supervision are provided;
- Where hazards cannot be eliminated suitable protective clothing and equipment are provided;
- Emergency plans are prepared and revised;
- Welfare facilities are provided and adequately maintained; and
- Competent personnel who can advise and assist in securing the safety, health and welfare of employees are employed when required.
Signed:

Academic Leader: Jesus Frias

Date: 15/9/17
SCOPE OF SAFETY STATEMENT

The scope of our operations include:

The Environmental Sustainability and Health Institute (ESHI) is a dedicated national translational research platform, uniquely based on collaboration between Dublin Institute of Technology (DIT), the Health Service Executive (HSE) and Dublin City Council (DCC), building national and regional capacity and capability.

ESHI is an all-island initiative, involving strategic partnerships with the University of Ulster (UU), Dublin City University (DCU), the Institute of Public Health (IPH) and other stakeholders. It is uniquely positioned to facilitate an interdisciplinary and cross-sectoral approach, integrating academic research with the knowledge and expertise of relevant professionals to generate collective responses to public health issues. Building upon existing education and research expertise, in addition to collaborations and strategic partnerships with multi-sector stakeholders, researchers at ESHI develop evidence-based interventions addressing environmental health problems.

The establishment and overall development of ESHI is overseen by an Advisory Board comprising senior representatives from business (IBEC), health agencies (HSE, IPH), academia (DIT, UU) and government agencies (EPA, DCC). Furthermore, the ESHI Scientific Advisory Board will be composed of leading academics in science, engineering and policy, health service representatives and industry experts. They will contribute to the long term strategy and research program by identifying national/international health threats and potential gaps in policy, regulations, and/or other interventions needed for a healthy population.

HISTORY OF LOCATION

Our staff offices and operations are located in the following areas:

The ESHI Research Institute, inaugurated in March 2017, aims to facilitate and support scientific research developed in a partnership that includes DIT, the HSE, EPA, DCC and IPH. Collaborative projects of these partners with industry, State scientific bodies, research organisations and other universities are an important part of the ESHI Research Institute’s research activities.

The ESHI Research Institute has a total of 5 core staff members, 1 Academic Leader, 3 Technical staff and 1 Administrative staff. Additionally, approximately 95 postgraduate students occupy the ESHI Research Institute on a full time basis. in the Greenway building, sharing the facility with the Office of the President, the Office of the Director of Research Enterprise and Innovation Support and the Hothouse. ESHI also receives visiting researchers and project students, from DIT, nationally and internationally.

The ESHI Research Institute supports higher degrees such as postgraduate diplomas (PgDip), Masters of Philosophy (MPhil) and Doctorates of Philosophy (PhD). It also supports training involving undergraduate, postgraduate and professionals.

SAFETY RESPONSIBILITIES

In accordance with the DIT Framework Safety Statement, the academic leader of ESHI, as part of his/her management function, is responsible for ensuring, so far as is reasonably practicable, the safety, health and welfare of persons working, studying or visiting their area of responsibility. In particular s/he is responsible for the following:
1. To ensure a safety statement relevant to operations is prepared which complies with Section 20 of the Act.
2. To ensure that the safety statement is reviewed at least annually and that the DIT Senior Leadership Team (SLT) Health and Safety Sub-committee is notified that the review has been completed and is provided with any updated document which may result from such a review.
3. To ensure that all hazards are identified and risks controlled.
4. To ensure that regular safety inspections/audits are carried out by the School to monitor compliance with the safety statement and legal requirements and to ensure appropriate follow-up action is taken.
5. To investigate all accidents to staff/students/visitors/campus users/contractors/service providers in their area of responsibility and to complete the Incident Report Form as appropriate.
6. To ensure that local emergency plans and first-aid procedures are implemented and that sufficient evacuation marshals/first-aid personnel are available.
7. To ensure that staff are appropriately trained to carry out their duties safely and to ensure the attendance of staff at designated training courses as appropriate.
8. Based on risk assessment, to arrange for the provision of adequate and appropriate personal protective equipment for employees.
9. To ensure that all contractors/service providers carrying out work in the area operate under the Estates Office Permit to Work system and to ensure that all contractors/service providers carry out any risk assessment required in respect of any work being undertaken.

All DIT Staff
All employees/staff have a duty to take responsibility for their own safety, health & welfare and for that of students/visitors and any other person who may be affected by their acts or omissions while at work.

Statutory Requirement

Chapter 2, Sections 13 & 14 of the Act places a number of obligations on employees whilst at work as outlined in this section:

13.—(1) An employee shall, while at work—
(a) comply with the relevant statutory provisions, as appropriate, and take reasonable care to protect his or her safety, health and welfare and the safety, health and welfare of any other person who may be affected by the employee’s acts or omissions at work,
(b) ensure that he or she is not under the influence of an intoxicant to the extent that he or she is in such a state as to endanger his or her own safety, health or welfare at work or that of any other person,
(c) if reasonably required by his or her employer, submit to any appropriate, reasonable and proportionate tests for intoxicants by, or under the supervision of, a registered medical practitioner who is a competent person, as may be prescribed,
(d) co-operate with his or her employer or any other person so far as is necessary to enable his or her employer or the other person to comply with the relevant statutory provisions, as appropriate,
(e) not engage in improper conduct or other behaviour that is likely to endanger his or her own safety, health and welfare at work or that of any other person,
(f) attend such training and, as appropriate, undergo such assessment as may reasonably be required by his or her employer or as may be prescribed relating to safety, health and welfare at work or relating to the work carried out by the employee,
(g) having regard to his or her training and the instructions given by his or her employer, make correct use of any article or substance provided for use by the employee at work or for the protection of his or her safety, health and welfare at work, including protective clothing or equipment,
(h) report to his or her employer or to any other appropriate person, as soon as practicable—
(i) any work being carried on, or likely to be carried on, in a manner which may endanger the safety, health or welfare at work of the employee or that of any other person,
(ii) any defect in the place of work, the systems of work, any article or substance which might endanger the safety, health or welfare at work of the employee or that of any other person, or
(iii) any contravention of the relevant statutory provisions which may endanger the safety, health and welfare at work of the employee or that of any other person, of which he or she is aware.

(2) An employee shall not, on entering into a contract of employment, misrepresent himself or herself to an employer with regard to the level of training as may be prescribed under subsection (1)(f).

14.—A person shall not intentionally, recklessly or without reasonable cause—
(a) interfere with, misuse or damage anything provided under the relevant statutory provisions or otherwise for securing the safety, health and welfare of persons at work, or
(b) place at risk the safety, health or welfare of persons in connection with work activities

In addition, staff have the following responsibilities:

- Participate in and put into practice all training provided by DIT, to ensure compliance with best practice and health and safety legislation;
- Co-operate with those responsible for health and safety;
- Familiarise themselves with the contents of safety statement, safety policies and procedures and Codes of Practice;
- Assist and co-operate with periodic safety inspections/audits;
- Assist in the completion of standard hazard identification control sheets and co-operate with the reporting and investigation of incidents;
- Ensure that all equipment is operated in a safe manner and good housekeeping standards are maintained at all times;
- Promote safe work practices;
- Use equipment only if authorised and trained;
- Lecturing staff that have responsibility for undergraduates/postgraduates/post doctorates and apprentice students, must ensure that those under their supervision receive safety information and training appropriate to the hazards and risks that they may be exposed to;
- Ensure that any safety concerns associated with new equipment/machinery is brought to the attention of the academic leader of ESHI, implemented, documented in the safety statement and communicated effectively;
- Staff should ensure that they do not carry out repairs or servicing on plant/equipment/machinery unless they are trained to do so, it is isolated and they should ensure that any guards removed to carry out repairs are properly replaced (insert if relevant);
- All staff, visitors, and contractors/service providers must wear appropriate personal protective equipment where required (insert if relevant);
- Adhere to policies, procedures in the case of lone working/out of hours access (insert if relevant);
- Report to the academic leader of ESHI any person abusing facilities or equipment;
- Select and appoint a safety representative; and
- Notify the Health & Safety Officer of any perceived shortcomings in the safety arrangements.

Undergraduate/Postgraduate/Apprentice Students
Students have a legal responsibility not to endanger themselves or others by their acts or omissions. Thus they must:
Safety Statement, ESHI Research Institute

- Take reasonable care of their own safety and the safety of others;
- Co-operate fully with all safety rules and regulations issued by DIT e.g. smoking etc.;
- Co-operate with those with responsibility for health and safety;
- Not interfere or misuse any specified items of safety equipment or any safety device;
- Ensure that equipment is operated in a safe manner and good housekeeping standards are maintained;
- Use personal protective equipment (PPE) as necessary. (Students are required to provide their own PPE – laboratory coat, safety glasses etc.). Students will be advised by ESHI staff on the commencement of their academic course of study, what, if any, PPE is required;
- Not access or use laboratory/workshop facilities and equipment without the permission of their academic supervisor and where necessary the ESHI office;
- Use equipment only if authorised and properly trained;
- Report any incident, dangerous occurrence, defective equipment or potential safety hazard to the academic leader of ESHI;
- To participate in any safety training programmes facilitated by the Health & Safety Office;
- Adhere to policies and procedures in the case of lone working or out of hours access. (insert if relevant)

Contractors/Service Providers

The following responsibilities are allocated to contractors/service providers:

- All contractors/service providers will be expected to comply with DIT’s safety statement and must ensure that their own safety statement is made available whilst work is being carried out. It is DIT’s policy that all contractor/service providers have a safety statement which is prepared in accordance with the Act.
- All work must be carried out in accordance with relevant statutory provisions and taking into account the safety of others on the site. The contractor/service provider must have adequate insurance cover;
- Contractors/service providers must not commence with any work on the premises or project site until the Contractor Safety Guidelines and other relevant safety procedures are read, understood and accepted (they are available from the Estates Office). They must complete the e-learning programme for contractors/service providers;
- Contractors/service providers will take reasonable care of themselves and others who may be affected by their acts or omissions and will co-operate as appropriate with DIT employees as necessary;
- Contractors/service providers must supply at tender stage a safety statement, relevant method statements, copies of their public and employers liability insurance and complete the contractors compliance form CCF1 before a contract is awarded;
- They will liaise with the local Building Maintenance Manager and obtain work permits as required;
- Contractors should assess the work to be undertaken and conduct all appropriate risk assessments before undertaking a piece of work. These risk assessments should be recorded in writing;
- Scaffolding and other access equipment used by contractor’s/service provider’s employees must be erected and maintained in accordance with current legislation and Codes of Practice;
- All plant and equipment brought onto the site by contractors/service providers must be safe and in good working order, fitted with any necessary guards and safety devices and have all necessary certificates available for inspection;
- All transformers, generators, extension leads, plugs and sockets must be suitable for industrial use and in good condition. No power tools or electrical equipment of greater than 110 volts
should be used outdoors. If it is necessary to use equipment operating from a 220-volt supply, a residual current device with a rated tripping current of 30mA and operation of 30m sec must be used;

- Any injury sustained by a contractor’s/service provider’s employee must be reported immediately to the local Building Maintenance Manager;
- Contractors/service providers must comply with any safety instructions given by DIT;
- DIT Health & Safety Office may carry out safety inspections. Contractors/service providers informed of any hazards or defects identified during these inspections will be expected to take immediate action;
- DIT must be notified of any material or substance brought onto the site which has health, fire or explosive risks. Such materials must be stored and used in accordance with current recommendations;
- Contractors/service providers will be accountable for the maintenance of good housekeeping practices at all times within their respective areas of work; and
- Contractors/service providers are not allowed to use equipment owned by DIT unless written permission is received from the Academic Leader of ESHI and a competent person passes it as being safe
- Contractors should report any accidents on site in compliance with the instructions provided on their induction training.

Visitors (a person other than an employee or contractor/service provider)

- Visitors may not be aware of the potential hazards associated with DIT and also may lack familiarity with DIT’s premises/facilities and are therefore a potential risk to themselves and others. All visitors must identify themselves to the relevant DIT personnel and follow all DIT’s safety procedures and policies;
- Where necessary, visitors will wear safety shoes, safety glasses or other appropriate personal protective equipment (PPE), particularly in the laboratories/workshops/kitchens etc. Such information should be given to the visitor prior to the visit if possible;
- Visitors must not enter any area where they do not have the authority to do so. Hazardous areas will be restricted;
- Visitors must not interfere with any of DIT’s property, equipment, materials or substances unless they have permission to do so from the person in charge;
- Visitors must not remain on the premises any longer than necessary and should return PPE on leaving;
- In the event of an evacuation, visitors will be led to the Assembly Point by their DIT host;
- A safety booklet and wallet card is available at front desk/reception area and on request;
- The DIT Framework Safety Statement is available on the safety website www.dit.ie/safework ;and
- DIT has a Child Protection Policy available on the DIT website.

**DISCIPLINARY ACTION**

Any member of staff/student who contravenes or fails to manage to work in accordance with health and safety legislation, the DIT Framework Safety Statement and codes of practice may be subject to relevant DIT disciplinary procedure. The Estates Officer will address any contraventions by contractors/service providers.
HEALTH AND SAFETY CONSULTATION

Employers are obliged under the Act, to consult with and take account of any representations made by employees regarding safety, health and welfare. The ESHI ensures that health and safety is an agenda item at all meetings and ensures that working groups are appointed to deal with specific health and safety items if required.

A nominee from the ESHI sits on the Health and Safety Team for Greenway Building health and safety team. This team meets periodically throughout the year.

It is the nominee’s responsibility to bring to the attention of the Health & Safety Team for consultation changes, updates or modification to a particular work process, when new machines or processes are introduced or when new substances or materials are introduced.

The Greenway Health and Safety Team has selected and appointed safety representatives. Details of current safety representatives may be found on the health and safety website (www.dit.ie/safework)

PROVISION OF INFORMATION

Personnel are made aware of safety matters by the following means:

- Agenda item at Team/Function meeting
- Desktop Emergency Response Flip charts
- Health & Safety notice boards
- Health & Safety Newsletters
- Toolbox talks
- Health & Safety Induction
- Health & Safety Training courses
- Signage:
  - Safety notice points
  - Emergency first-aid procedure signs
  - Emergency floor plans
  - Assembly point maps
  - Fire actions notices
- Emergency Response posters
- Safety booklets
- Website www.dit.ie/safework
- Posters
- Inductions are prepared and delivered by Occupational Health Officers where requested
- The Academic Leader of ESHI, the ESHI Administrator, and the Nominated ESHI Health and Safety Officer has an email listing to communicate matters to staff members

HEALTH AND SAFETY RESOURCES

The ESHI codes all budgetary spend on activities/spend pertaining to safety, health and welfare. Considerable resources are expended by the ESHI in securing the health, safety and welfare of employees in terms of personnel, time, materials, equipment and the purchase of goods and services.

Where additional equipment, training etc. is required whether as a result of ongoing risk assessment or legislative change, resources will be allocated with priority to meet the identified requirements.

The health and safety website hosts a reference library of videos, texts, literature and other publications on health and safety matters.
SAFE SYSTEMS OF WORK

It is the policy of DIT to ensure that employees are not asked to perform tasks outside their competence and capacity. Safe systems of work have been designed with this objective in mind.

As some work activities give rise to risks which can only be controlled by adherence to proper procedures, employees in these circumstances may be issued with written safe working procedures which should be adhered to at all times.

Safe working procedures apply to the following ESHI infrastructure:
1. SOP Waste Disposal
2. SOP Spills
3. SOP Fire evacuation
4. SOP Fumehoods
5. (Instruments)

The ESHI operations group shall keep a watching brief on safety matters and where necessary adjust or alter systems of work to make them as safe as is reasonably practicable.

PROCUREMENT CONTROL

The purchasing of equipment, plant and substances is subject to the provisions of the Act and associated regulations, thus all equipment, plant or substances will be risk assessed before they are acquired and/or brought into DIT.

The ESHI Research Institute follows all the guidelines as per the Framework Safety Statement and ensures that a risk assessment is carried out before any equipment/machinery or contractor/service provider is engaged by the ESHI Research Institute. Details of equipment/machinery/tools and associated risk assessment is available in the Physical Hazards section of the risk assessment.

For all new equipment purchased, the purchaser is to ensure that the equipment complies with recognised ergonomic and safety standards. Machinery suppliers shall be requested to supply all relevant information including specifications for machine guarding, maintenance, noise, fumes, dust, special training needs etc. which will assist in the risk assessment process.

Chemicals:
Any employee or researcher requiring a new chemical, either for process activity or as a sample, must first obtain an SDS and have available a risk assessment detailing use, storage and operation. The laboratory co-ordinator ordering the chemicals should monitor this process in consultation with the Greenway H&S Officer.

Before any new chemical classed as a carcinogen, mutagen and reproductive toxin (CMR) which is subject to the restrictions of the Safety, Health & Welfare at Work Carcinogen Regulations 2001 is purchased, it must first receive approval from the Academic Leader of the ESHI Research Institute. Safety Data Sheets (SDS) and a CMR risk assessment for its use must be provided. This information must be attached to the order form. The laboratory co-ordinator ordering the chemical should monitor this process. There is also a responsibility on the individual ordering the chemicals to ensure that no alternative is available. Sign off procedure must be documented and circulated to technical staff and the Greenway H&S Officer as a code of practice.

Radioactive chemicals and materials:
Personnel are not permitted to bring radioactive materials on site without the prior written authorisation of the Radiation Protection Officer Dr. Jacinta Brown, School of Physics.

Please list all equipment/machinery/tools and associated risk assessment in the Physical Hazards section of the risk assessment.
INSPECTION PROCEDURES

Following any inspection the Academic Leader of ESHI will ensure non-conformances identified are rectified and a log maintained.

Where in the opinion of the Health & Safety Officer or other competent officer, there is a risk of serious injury and immediate risk to individuals, she will have the authority to advise that the activity is stopped until adequate steps have been taken to eliminate risk or if possible reduced to an acceptable level. Where the risk cannot be reduced to an acceptable level and finance is not available to address the risk, the Academic Leader of ESHI shall ensure the activity is ceased.

In accordance with statutory requirements, certain examinations, testing and inspections are carried out on specific items. A list of those items, the frequency of inspection and the testing body is presented below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Location</th>
<th>Test Frequency</th>
<th>Test Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fumehoods</td>
<td>Third and fourth Floor</td>
<td>Annually</td>
<td>NSP</td>
</tr>
<tr>
<td>Isolators (HEPA filters)</td>
<td>Fourth floor</td>
<td>Annually</td>
<td>Biosciences</td>
</tr>
<tr>
<td>Fire Fighting Equipment, fire alarms and sensors</td>
<td>All levels</td>
<td>Annually</td>
<td>Total Fire Protection Ltd</td>
</tr>
<tr>
<td>Gas cylinders</td>
<td>Instrumentation room and Maintenance Plant</td>
<td>Annually</td>
<td>BOC</td>
</tr>
<tr>
<td>Gas lines</td>
<td>Fifth Floor to third and fourth floors</td>
<td>As required</td>
<td>Irish Medical Gases</td>
</tr>
<tr>
<td>Equipment using Industrial voltage</td>
<td>Energy Lab, Biomonitoring Lab, Microbiology Lab.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GMO License</td>
<td>Fourth Floor</td>
<td>Variable (annually)</td>
<td>HSE</td>
</tr>
</tbody>
</table>

TRAINING

Health and safety training is a legal requirement specified by the Act. It is also DIT’s Policy that all employees attend such health and safety training and assessment. Please see Health and Safety Training Policy for Staff.

In accordance with Section 11 of the Act, each employee will be made aware of emergency action plans and arrangements pertinent to their workplace at induction by completing the online Emergency Response Training (ERT) programme.

In addition to DIT’s statutory duty to employees, it seeks to provide such training as is necessary to enable the students to undertake their studies in a manner which, in so far as it is reasonably practicable, is safe and does not give rise to risks to health or expose the individual student or other persons to unacceptable levels of risk. The provision and extent of any necessary training is dependent upon the nature of the academic discipline being pursued, the experience and disposition of the students involved, their familiarity with any equipment/substances to be utilised, the environment/conditions where the activities may be discharged, and the extent to which supervision is necessary and available. Risk assessments will highlight where additional student training is required.

Health and safety training required for the ESHI includes:
Mandatory Training for all researchers:
- Emergency Response Training (ERT);
- Manual Handling;
- Emergency First-aid;

Specialist Training:
- Out-of-hours access training;
- Gas Safety;
- Chemical Safety;
- Chemical Risk Assessment Training
- Evacuation Marshall;
- Occupational First-Aid;
- Dangerous Goods Safety Advisor (DGSA); To Be Appointed. please note this is in progress by DIT
- Child Protection.

DIT staff involved in line management and supervision in ESHI:
- Health & Safety Responsibilities: Management Responsibilities
- Health & Safety Responsibilities: Management Workshops
- Legal Update for Managers (for grades V and above);
- Dignity at Work;
- Interviewing skills

**EMERGENCY PLANNING AND RESPONSE**

**SERIOUS INCIDENT/EMERGENCY**
- Dial 112/999 (You may need to dial “0” for an outside line)
- Contact DIT Health & Safety Officer - 086 3891080

**REQUIRES FIRST-AID**
- Seek local first-aider – See Contacts Page
- Injured unwell staff/students:

  **Occupational Health Officer:**
  Yvonne McArdle 087 9809135
  Rosie Cannon 087 9809194
  Orlaith Waters 087 9809131

- Injured/Unwell Students:

  **Student Health Centres**
  Northside 01 4023614
  Southside 01 4023051
If serious/after 5pm/in doubt, go directly to local A & E/local GP

REQUIRES FURTHER ATTENTION

- Staff members should attend their local GP.
  Students should attend the Student Health Centre.
- Structural safety matters - should be referred to the local Buildings Maintenance Manager.
- Operational safety matters – should be documented on a Hazard Report Form and sent to the Health and Safety Office (www.dit.ie/safework).

FIRE & EVACUATION
ESHI RESEARCHERS/STAFF

INSTRUCTIONS ON DISCOVERING A FIRE (all staff, students, visitors, contractors/service providers, other etc.)

- Activate the nearest fire alarm point.
- Leave the building using the nearest exit route.
- Disperse from the building and move away to place of safety.
- Do not use the lift.
- Do not re-enter the building until the “all clear” has been given.

INSTRUCTIONS ON HEARING THE EVACUATION ALARM OR OTHER WARNING (all staff, students, visitors, contractors/service providers, other , first-aiders etc.)

Objectives:
To outline actions to be taken by ESHI researchers/staff in the event of an alarm activation

Duties:

On hearing an alarm activation or other warning:
- Each office should instruct students and staff to evacuate the building using the nearest available exit, ensuring the safety shutdown of equipment/electricity/gas;
- Instruct students and staff to leave ESHI;
- All students in the laboratories should be led by PIs/technicians;
- All visitors should be escorted to safety by the person they are visiting;
- Anyone in common areas or moving between areas, should immediately join the lines of people exiting;
- Shut down equipment if safe to do so and time permits;
- Close windows and doors to confine smoke/fire spread;
“Sweep search” the area specify area (offices, classrooms, cloakrooms, sanitary facilities, storage areas), evacuate the building* immediately by the nearest available exit. Marshals should then leave immediately via the nearest escape route;

- If required, assist any individuals to evacuate the area;
- Form a single file on both sides of the corridor or stairway, leaving the centre passageway clear;
- Do not delay or stop to collect personal belongings;
- Do not use the lift;
- If heavy smoke present, try to find another exit or crouch low to the floor;
- All doors should be closed (not locked) by the last person in the line;
- Report to your Assembly Point - **Assembly Point B - Courtyard, Grangegorman** 50 meters in front of the Greenway building exit.

- All evacuation marshals/sweepers, Building Maintenance personnel, academic leader of ESHI, first-aiders should assemble at the assembly point(s) to check in, reporting to the Incident Controller details of any casualties or people needing assistance with evacuation. This information is then given by the Incident Controller to the Emergency Services.
- Confirm to the Incident Controller that the area has been cleared and report details of any casualties or people needing assistance with evacuation to the Incident Controller; and
- No one should/is permitted to re-enter the building until the all clear has been given by the Incident Controller.

* Separate personal emergency egress plans (PEEP) have been prepared for persons with disabilities

**Emergency Exit Plan**

The **fifth floor laboratory and outdoors solar laboratory** have an special emergency exit plan which the occupants of the facilities will have to adhere to:

- No unauthorised access to these facilities is permitted and authorisation will be given by the ESHI operations office on a case-by-case basis.
• A listing of authorised occupants of the two facilities will be maintained by the ESHI operations group.
• Visitors will need to be authorised by the ESHI office. Should any of the pre-approved receive a physical injury the authorisation will have to be reviewed.
• Authorised occupants will need to be in a capacity of less than 4 occupants of the facility at a time and will have trained and practiced the fire exit plan every year.
• On identification of a fire or hearing the fire alarm the facility occupants will exit to the outdoors laboratory and open the fire-hatch in the balcony.

• The occupants will leave orderly by the vertical ladder and will descend on the stairs leaving the building and joining the rest of the ESHI STAFF.

YOU SHOULD FAMILIARISE YOURSELF WITH THE LOCATIONS OF THE FOLLOWING:
• Escape routes
• Fire alarm call points
• Fire extinguishers and blankets
• Fire assembly points

Please insert Assembly Points and pictures
• **Assembly Point B - Courtyard, Grangegorman** 50 meters in front of the Greenway building exit.
All staff members working in ESHI are automatically evacuation marshals.

ESHI will ensure that sufficient marshals are appointed on an ongoing basis to provide an effective service.

Your Incident Controller is: Porter on Duty

General Rule of Thumb – all staff should act as “sweepers” in the event of an emergency, checking offices, laboratories training/meeting rooms (amend this list accordingly) as they exit to ensure that as they exit everywhere has been cleared.

YOU SHOULD NOT PUT YOURSELF IN DANGER AT ANY TIME

FIRST-AID

- An emergency first-aid kit and automatic external defibrillator (AED) is available at the front desk/reception area.
- A list of DIT staff who have completed training in first-aid/AED is available on the health and safety website

List members of staff trained in this area

First-aid kits are located at:

Please report any used items to the designated person in charge who is responsible for monitoring the contents and ensuring their replacement.

Further Treatment / Incident Report Forms
• Staff may refer students to the Student Health Centre in DIT, Linenhall, Bolton Street at 01 402 3614 or Aungier Street 01 402 3051 or contact the Emergency Services on 112 / 0999 if an incident is urgent
• Incident Report forms are available from the front desk. When completed and signed the top white copy should be sent the DIT Health & Safety Office
• An Occupational Health Officer Yvonne McArdle is available at 087 9809135 weekdays 9:00 am – 5:00 pm to deal with the occupational health, safety and welfare needs of all staff and students and to provide a back-up first-aid service

INCIDENT REPORTING AND INVESTIGATION

DIT has a statutory duty to record all incidents/accidents and report certain types of accidents and dangerous occurrences to the Health and Safety Authority (HSA). Therefore all incidents resulting in personal injury, damage to property, dangerous occurrences or near miss e.g. must be reported immediately to your Manager/Supervisor.

The incident report form must be forwarded to the Health & Safety Officer within 24 hours of the incident occurring or as soon as possible. Incident report forms are available at the front desk/reception area and on the health and safety website.

HAZARD REPORTING

DIT recognises the part that its staff members, students, visitors, contractors/service providers and campus users have to play a part in the reporting of hazards in the workplace. There is a report form to formally identify and report hazards. If the hazard is a structural issue, it should be reported immediately to the local Building Maintenance Manager and if it is an operational safety issue, it should be reported to local management using DIT’s Hazard Report Form available on the health and safety website.

MANAGEMENT OF CONTRACTORS/SERVICE PROVIDERS

All building/construction work undertaken by outside contractors/service providers on behalf of ESHI must be carried out under a Estates Office Permit to Work.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

It is the policy of DIT to eliminate all hazards where reasonably practicable. DIT will assess what PPE appropriate to the task/work environment is required only as a last resort when further risk reduction is not feasible.

All PPE and safety equipment purchased by the ESHI (or by students at the request of the School) must be of approved standards and comply with relevant EC Directives regarding design and manufacture. Defects shall be reported to managers/supervisors.

The various areas where PPE must be worn are outlined in the School risk assessments. This is further complemented with mandatory signage. PPE shall be provided and worn in designated areas and whilst carrying out specific tasks, based on the risk assessments.
All PPE must be appropriate for the risks involved without it leading to increased risk. It should be chosen based on assessment and in consultation with staff members. The PPE should be used only for the purpose specified and where it is necessary to wear simultaneously more than one item of PPE, they must be compatible with each other and continue to be effective against the risks involved. Staff should report immediately when the PPE is faulty or defective or if they have any medical condition that may affect the correct use of the PPE.

PPE should be of a type suitable for the conditions in the workplace and take account of the user’s state of health. It is in principle intended for one’s personal use only, however if it is necessary for an item of PPE to be worn or used by more than one person, measures should be taken to ensure that it does not create any health or hygiene problems for the users. The supply, issue and record of all PPE is the responsibility of Supervisors. Employees and students must be informed by the Academic Leader of all risks they are being protected from, instructed on the use of the PPE and given adequate information, training and demonstration in the wearing of such equipment and the level of protection afforded by its use. Every person provided with PPE must take reasonable care of such equipment and must make proper use of it where there is a foreseeable risk of injury and where they have been instructed to do so. They must also ensure that it is returned to storage subsequent to use. Supervision and monitoring are required to ensure PPE is used/worn.

Staff shall inform any person in the area including contractors/service providers, students and visitors of the statutory and local policies in place with regard to PPE.

PPE includes: gloves (nitrile and cold), goggles, Howie lab coat, respiratory protection

Gloves

The hazards of the materials that will be used are evaluated prior to selecting gloves. Nitrile examination gloves are appropriate for most routine work. These gloves are single-use only; they cannot be washed and reused. Gloves must be checked for holes or tears. Gloves must be selected with the agreement of the laboratory co-ordinator.

Respiratory Protection

Respiratory protection may be necessary if aerosol generation cannot be prevented or contained by other means.

Eye and Face Protection

Safety glasses must have side shields. Chemical splash goggles may be necessary if the work involves chemicals. A face shield may be necessary in addition to the safety glasses or goggles if the potential for splashing, spraying, or aerosol generation exists.

Laboratory Clothing

Shorts, sandals, and open-toed shoes should not be worn in the laboratory. Howie-style laboratory coats must be worn and buttoned, to protect clothing from potential contamination. Lab coat sleeves should be long enough to enable the wearer to overlap the glove cuffs with the sleeves. The laundry of lab coats is the responsibility of each individual. Once a lab coat is contaminated it should immediately be changed for a clean coat. Where head scarves are worn, they must be tight-fitting to the head.
ERGONOMICS

All new equipment and machines, tools, work methods, work procedures and work stations should be assessed for ergonomic hazards prior to being brought into use. The Health & Safety Officer should be informed of the risk assessment process and will advise of competent people to assist with the risk assessment.

Staff should consider ergonomic standards when designing new workstations and layout of new offices.

It is the responsibility of the Academic Leader to ensure that all information on ergonomic controls is communicated to employees and students via circulars, team briefings or other means. She/he should also ensure that all problems identified are addressed and brought to the attention of the Health & Safety Officer.

WELFARE PROVISIONS

In accordance with legislation, DIT is committed to providing welfare facilities which are available to all staff which include the following:

- Adequate and suitable sanitary and washing and drying facilities with hot and cold running water maintained in a clean and hygienic condition.
- Adequate number of lavatories and washbasins with hot and cold running water.
- Adequate and suitable showers for employees if required by the nature of the work.
- An adequate supply of potable drinking water at suitable points conveniently accessible to all employees, tested by the Estates Office.
- Suitable facilities for sitting/other ergonomic support, in the case where work can be done in a seated position.
- Suitable and adequate facilities for boiling water and taking meals or reasonable access to other suitable and adequate facilities: Rathdown House and Tearoom, ground floor, Greenway Hub.
- Easily accessible rest rooms/areas with seats with backs.
- Adequate provision for drying wet or damp work clothes.
- Adequate ventilation, temperature and lighting.
- Fire detection and fire fighting equipment.
- Emergency routes and exits.
- Pedestrian and traffic management systems.
- Clean and well maintained interior walls, floors and traffic routes.
- Rest facilities for pregnant ladies or breastfeeding mothers.

- Everyone is obliged to care for these facilities and must not misuse them. All welfare provisions should be maintained in a clean safe condition
- Arrangements for regular cleaning of premises and removal of waste should be made by the local Building Maintenance Manager. Arrangements for cleaning and waste disposal is outlined in the risk assessments below
- Drinking water is available to all staff at drinking fountains on every level of the Greenway Hub
SENSITIVE WORK GROUPS

Protection of Children and Young Persons
In cases where children must be present on DIT premises and therefore affected by our acts/omissions, sufficient notification must be given to the Health & Safety Office by the DIT host representative, of the situation, so that an appropriate risk assessment may be carried out. When on DIT property, the parents/guardians/host representative charged with responsibility for bringing the child onsite, must be responsible for that child and ensure that at all times they are supervised and protected from activities, processes, equipment, machinery, agents etc.

Please detail any circumstances where this applies to your School/Function and complete the relevant risk assessments in the appendices.

Please ensure that all staff are familiar with the DIT Child Protection Policy.

Pregnant Post-Natal and Breastfeeding Employees/Students
The Safety, Health and Welfare at Work (General Application) Regulations 2007, places a duty on employers to assess the risks to determine any possible effects on new/expectant mothers resulting from any activity at the place of work.

- Each risk assessment will identify hazards in the workplace that could pose a health and safety risk to new and expectant mothers
- Where the assessment reveals a risk, then preventive or protective measures will be taken.
- Pregnant employees/students should advise the Health & Safety Office of their condition as soon as they are aware they are pregnant so that a confidential pregnancy risk assessment may be carried out.
- On returning to work/college any new mothers who are breastfeeding and require facilities should contact the Health & Safety Office.

LONE WORKING AND OUT OF HOURS ACCESS

The Greenway building will have out of hours access. Please see the risk assessment for this activity in Appendix 1. All out-of-hours work is through a buddy system where lone working is not allowed under the present Safety Statement.

WORK PLACEMENT

Work placement does not take place for ESHI.

TRIPS/TRAVEL

Staff must complete a risk assessment prior to trips. All trips and travel proposals must have a risk assessment completed prior to the event.

STAFF/STUDENTS WITH DISABILITIES

Specific risk assessments will be completed to ensure that the health and safety needs of staff and students with permanent/temporary disabilities are taken into account. Preventative and proactive measures will be put in place following the risk assessment if specific hazards are identified. Personal emergency egress plans (PEEPs) will also be prepared if required. The Disability Liaison Officer will provide specialist and competent advice and liaise with the Health & Safety Officer, Occupational
Health Officers, College Manager and Building Maintenance Manager. The onus is on visitors with a disability to notify staff at the front desk, who will assist in evacuation if required.

Please ensure all staff and students are familiar with the procedure and are referred to relevant services where necessary.

HEALTH SURVEILLANCE

Risk assessments will determine if health surveillance is required. Health Surveillance is made available to all staff appropriate to the health and safety risks present and facilitated by the Health & Safety Office. In certain circumstances, staff and students may be referred to our external Occupational Health Physician for a health assessment in relation to their work/studies to ensure that we can put in place any additional corrective action if required.

Eye tests are available for regular visual display unit users at the National Optometry Centre. Please familiarise yourself with the eye test policy which is available on the health and safety website.

WORKPLACE DRUGS, INTOXICANTS AND ALCOHOL

Staff and students must ensure that they are not under the influence of an intoxicant to the extent that they are in such a state as to endanger their own safety, health or welfare or that of any other person. Contraventions will be dealt with as per DIT disciplinary procedures.

DIGNITY AT WORK ANTI BULLYING & HARASSMENT POLICY AND PROCEDURES

DIT’s Dignity at Work Anti Bullying & Harassment Policy and Procedures deals with complaints against members of staff in the workplace which also includes work associated events such as meetings, conferences and work related social events, whether on the premises or off site. Bullying or harassment of staff/students will not be tolerated. Please ensure that all staff are familiar with the relevant policy/procedure.

STRESS

The risk assessment will identify any areas where stress is a hazard and controls will be implemented to eliminate this hazard. The Human Resources (HR) department should be consulted immediately if an issue regarding stress is highlighted. An Employee Assistance Programme (EAP) is available to all staff. Students should liaise with their tutors in relation to issues regarding stress. Tutors are appointed for groups of students. Students may also seek assistance from the Student Health Centre and Student Counselling Service.

AUDIT, REVIEW AND COMMUNICATION

ESHI ensures that periodic health and safety audits are completed and a review of all safety statements and documentation takes place. This will be approved by the DIT SLT Health and Safety Sub-Committee. All changes will be communicated to all staff, students, visitors and contractors/service providers. The most recent revision of all safety statements will be available on the DIT safety website and from the ESHI Administrator.
DOCUMENT CONTROL

This document is a controlled document and as such any updates, review and distribution will be in accordance with DIT’s standards for such documents. Only controlled copies will be updated when required.
The Academic Leader will issue new documents after appropriate consultation and agreement with relevant parties.

HAZARD IDENTIFICATION, RISK ASSESSMENT AND CONTROL MEASURES

It is the policy of DIT to identify hazards in the workplace, assess the risk to safety and health and control these risks as far as is reasonably practicable.

The Framework Safety Statement outlines the generic hazards, which have been identified and the control measures that are in place.

It is incumbent on those responsible for managing their areas of work, at all levels, not merely to observe the arrangements described in the Framework Safety Statement, but to assess their applicability within their area of authority and where necessary to refine and extend them to deal with particular local situations. The management of DIT are committed to the ongoing identification of hazards, assessment of the appropriate risks and the introduction of controls to deal with them. Management at all levels have a responsibility to apply this principle within their area of authority.

Staff are encouraged to become involved and participate in safety, health & welfare issues. In particular, they are encouraged to identify any potential hazards, which may exist, and to ensure that a risk assessment is carried out. Ongoing hazard inspections will be carried out periodically to ensure that the information is updated, controls are adequate and where necessary the risks are reassessed.

A “hazard” is taken to mean “any substance, article, material or practice which has the potential to cause harm to the safety, health or welfare of staff, students, visitors, contractors/service providers in DIT”. Hazards may be classified as:

- Physical;
- Chemical;
- Biological;
- Operational; and
- Human Factors

“Risk” is a measure of the probability of the event occurring and the severity and extent of the injury, ill health or damage it may cause if it did occur.

Risks may be classified as:

- High;
- Medium; and
- Low.

High Occurrence is probable, and could cause a fatality, serious injury or serious ill health to an individual or group of people.
Medium Occurrence is possible and could cause injury or ill health to an individual or a small group of people.
Low Occurrence is possible but unlikely, only minor injury would be caused and would probably be limited to a single individual.

The classification of hazards should be used to develop the priority of control measures, remedial actions, and the allocation of resources. As a general rule, the control measures will seek to eliminate any risk classified as high and reduce the potential of risks classified as medium or low.

Risk control measures are a combination of:

- **Elimination** Where the risk is removed.
- **Substitution** Where the risk is exchanged for one of lesser classification.
- **Isolation** Where the risk is contained (e.g. Enclosures, guards etc.).
- **Engineering** Where common systems are used to protect all exposed to risk (e.g. Fire alarms, ventilation systems etc.).
- **Personal Protection** Whereby the above means, the risk cannot be reasonably be reduced further, but an unacceptable level of risk remains, the team members are individually protected from the risk.
- **Procedure** Where procedural controls are used. This will include procedures such as Standard Operating Procedures and training and the provision of information may apply to any and all of the above control measures.
## Risk Assessments for ESHI

### PHYSICAL

<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
<th>Control Measures</th>
<th>Further Actions Required</th>
<th>Risk H/M/L</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
</table>
|     | Fire Emergency Response & Evacuation | Who is harmed:  
- Staff members  
- Students  
- Visitors  
- Contractors  
- Young persons  
- Pregnant  
- Postgraduates  
- People with disabilities | - Staff unfamiliar with evacuation procedure  
- Lack of evacuation drills  
- Use of naked flames  
- Improper storage of flammable or combustible materials  
- Smoking in undesignated areas  
- Faulty electrics  
- Inadequate emergency equipment  
- Misuse of equipment | - Staff trained in ERT  
- Sufficient firefighting equipment available break glass units, extinguishers, fire blanket)  
- Fire extinguishers include: foam, carbon dioxide  
- Firefighting equipment and detection systems maintained and tested  
- Evacuation signage  
- Emergency and first-aid procedures posted  
- Good housekeeping standards maintained  
- Several means of escape present and known to occupants  
- Evacuation procedure practiced each semester | With current controls: L  
With Actions applied: L | ESHI staff and students | Ongoing |
<table>
<thead>
<tr>
<th>Safety Statement, ESHI Research Institute</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>• Assembly point known to occupants</strong></td>
</tr>
<tr>
<td><strong>• Occupants escort visitors out</strong></td>
</tr>
<tr>
<td><strong>• All exits are clear and free from obstructions</strong></td>
</tr>
<tr>
<td><strong>• Staff members act as evacuation marshals</strong></td>
</tr>
<tr>
<td><strong>• No smoking policy in place</strong></td>
</tr>
<tr>
<td><strong>• Proper storage of flammable liquids and gas cylinders</strong></td>
</tr>
<tr>
<td><strong>• Scheduled maintenance of buildings services (heating, electricity, ventilation etc.)</strong></td>
</tr>
<tr>
<td><strong>• Hot work permit system</strong></td>
</tr>
<tr>
<td><strong>• Compliance with building regulations</strong></td>
</tr>
<tr>
<td><strong>• Site specific Emergency Manuals</strong></td>
</tr>
<tr>
<td>Ref</td>
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</tr>
</tbody>
</table>
|     | Manual Handling | Moving hazardous materials, substances, apparatus, furniture, audio visual e.g. lab books, manuals and gas cylinders etc. | - Manual Handling-related injuries, e.g. back injury  
- Slips, trips, falls | - All staff compliant with and adhere to mandatory manual handling training  
- Mechanical aids in use  
- Trolleys, stools available for staff  
- Manual handling risk assessments available to all staff, contact local Occupational Health Officer  
- PPE  
- Good housekeeping  
- Suitable environment  
- Implement team lifting were required  
- Adequate lighting maintained  
- Assistance from colleagues - team lifting  
- Report issues to Line manager  
- Items not stored above shoulder height | - Refresher training to be carried out where necessary  
- With current controls: L  
- With Actions applied: L | ESHI staff and students | Ongoing |
|     | Who is harmed: | | | | | |
|     | - Staff members  
- Students  
- Visitors  
- Contractors  
- Young persons  
- Pregnant  
- Postgraduates  
- People with disabilities |
<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
<th>Control Measures</th>
<th>Further Actions Required</th>
<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
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<tr>
<td>Work Equipment, Machinery &amp; Tools</td>
<td>Noise</td>
<td>Guards SOP; use and maintenance</td>
<td>With current controls: L</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
<td></td>
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<tr>
<td>Work Equipment, Machinery &amp; Tools</td>
<td>Vibration</td>
<td>Training / training records Service and maintenance</td>
<td>With Actions applied: L</td>
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<tr>
<td>Work Equipment, Machinery &amp; Tools</td>
<td>Entanglement/crushing</td>
<td>Supervision Visual check before use Report defects to ESHI Office</td>
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<tr>
<td>Work Equipment, Machinery &amp; Tools</td>
<td>Electrics</td>
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<tr>
<td>Work Equipment, Machinery &amp; Tools</td>
<td>Fumes/dust</td>
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<tr>
<td>Work Equipment, Machinery &amp; Tools</td>
<td>Contact with moving parts</td>
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<td>Who is harmed:</td>
<td>Staff members</td>
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<tr>
<td>Who is harmed:</td>
<td>Students</td>
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<tr>
<td>Who is harmed:</td>
<td>Visitors</td>
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<tr>
<td>Who is harmed:</td>
<td>Contractors</td>
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<tr>
<td>Who is harmed:</td>
<td>Young persons</td>
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<tr>
<td>Who is harmed:</td>
<td>Pregnant</td>
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<tr>
<td>Who is harmed:</td>
<td>Postgraduates</td>
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<tr>
<td>Who is harmed:</td>
<td>People with disabilities</td>
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<td>Ref</td>
<td>Hazard</td>
<td>Risk(s) Associated / Description</td>
<td>Control Measures</td>
<td>Risk H/M/L (with controls)</td>
<td>Person(s) Responsible</td>
<td>Target Date / Status</td>
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</tbody>
</table>
|     | Portable Appliances & Handheld Equipment | • Noise  
• Vibration  
• Entanglement/ crushing  
• Electrics  
• Fumes/ dust | • Guards  
• SOP  
• Training / training records  
• Service and maintenance (PAT)  
• Signage  
• Supervision  
• Visual check before use  
• Report defects to line manager  
• Emergency stop  
• PPE  
• CE mark  
• Shut down after use and end of day  
• Follow manufacturer’s instructions | With current controls: L  
With Actions applied: L | ESHI staff and students | Ongoing |
<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
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</thead>
<tbody>
<tr>
<td>Noise</td>
<td>Fume hood fan Greenway air control system</td>
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<tr>
<td></td>
<td>Who is harmed:</td>
<td>• Hearing loss / damage</td>
<td>• PPE</td>
<td>With current controls:</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>• Staff members</td>
<td>• Disruption / distraction</td>
<td>• Monitoring</td>
<td>L</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Students</td>
<td>• Interference with communications and warning signals</td>
<td>• Signage</td>
<td>With Actions applied:</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Visitors</td>
<td>• Fatigue</td>
<td>• Health surveillance</td>
<td>L</td>
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<td></td>
<td>• Contractors</td>
<td>• Tinnitus</td>
<td>• Engineering controls</td>
<td></td>
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<tr>
<td></td>
<td>• Young persons</td>
<td></td>
<td>• Information and training</td>
<td></td>
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<tr>
<td></td>
<td>• Pregnant</td>
<td></td>
<td>• Follow manufacturer’s instructions</td>
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<td></td>
<td>• Postgraduates</td>
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<td></td>
<td>• People with disabilities</td>
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<td>Person(s) Responsible</td>
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</tbody>
</table>
|     | Structural: Floors | Who is harmed:  
• Staff members  
• Students  
• Visitors  
• Contractors  
• Young persons  
• Pregnant  
• Postgraduates  
• People with disabilities |  
• Personal Injury  
• Slips, Trips and Falls  
• Collapse  
• Trapping |  
• Building appears to be structurally sound/ or not  
• Defects and hazards are reported to the BMM or through online hazard reporting |  
Contact Estates Office if problems arise |  
With current controls: L  
With Actions applied: L | ESHI staff and students  
DIT Estates Office | Ongoing |
<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
<th>Control Measures</th>
<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
</table>
|     | Walls  | Who is harmed:  
• Staff members  
• Students  
• Visitors  
• Contractors  
• Young persons  
• Pregnant  
• Postgraduates  
• People with disabilities  
  • Collapse  
  • Trapping |  
• Building appears to be structurally sound/ or not  
• Defects and hazards are reported to the BMM or through online hazard reporting. | With current controls: L  
With Actions applied: L | ESHI staff and students  
DIT Estates Office | Ongoing |


### PHYSICAL

<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
<th>Current Controls</th>
<th>Further Actions Required</th>
<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ceilings</td>
<td>• Collapse • Trapping</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Who is harmed: • Staff members • Students • Visitors • Contractors • Young persons • Pregnant • Postgraduates • People with disabilities</td>
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<td></td>
<td></td>
<td>• Building appears to be structurally sound/ or not • Defects and hazards are reported to the BMM or through online hazard reporting.</td>
<td></td>
<td></td>
<td>With current controls: L With Actions applied: L</td>
<td>ESHI staff and students DIT Estates Office</td>
</tr>
</tbody>
</table>

*Safety Statement, ESHI Research Institute*
<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
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<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Doors</td>
<td>Who is harmed:</td>
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<tr>
<td></td>
<td></td>
<td>• Staff members</td>
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<td></td>
<td>• Students</td>
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<td></td>
<td></td>
<td>• Visitors</td>
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<td></td>
<td></td>
<td>• Contractors</td>
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<td></td>
<td></td>
<td>• Young persons</td>
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<td>• Pregnant</td>
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<td>• Postgraduates</td>
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<td>• People with disabilities</td>
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<td></td>
<td></td>
<td>• Collapse</td>
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<td></td>
<td>Building appears to be structurally sound/ or not</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Trapping</td>
<td></td>
<td></td>
<td>Defects and hazards are reported to the BMM or through online hazard reporting</td>
<td>DIT Estates Office</td>
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<td></td>
<td></td>
<td>• Opening / closing safely</td>
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<td></td>
<td>Opening / closing safely</td>
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<tr>
<td></td>
<td></td>
<td>• Vision panel in place</td>
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<td>Vision panel in place</td>
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<tr>
<td>Ref</td>
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<td>Risk H/M/L (with controls)</td>
<td>Person(s) Responsible</td>
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<tr>
<td></td>
<td>Slips, Trips &amp; Falls</td>
<td>All laboratory floor in ESHI is anti-slip linoleum based. All office floor is carpet.</td>
<td>Estates Office to ensure upkeep and ensure floors are maintained.</td>
<td>With current controls: L</td>
<td>DIT Estates Office</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Who is harmed: • Staff members • Students • Visitors • Contractors • Young persons • Pregnant • Postgraduates • People with disabilities</td>
<td>All routes kept clear and unobstructed.</td>
<td>With Actions applied: L</td>
<td>ESHI staff and students</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Slips, trips and falls • Uneven surfaces • Wet floor conditions • Raised obstacles</td>
<td>SOP for cleaning.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Signage.</td>
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<td>Report hazards.</td>
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<td></td>
<td></td>
<td></td>
<td>Cable management.</td>
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<td></td>
<td>Pedestrian routes marked.</td>
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<td></td>
<td></td>
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<td>Changes in floor levels identified and marked.</td>
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<td></td>
<td>Door mats provided at entrance (main entrance).</td>
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<td></td>
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<td>SOP for slippages.</td>
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<td></td>
<td></td>
<td>Safety foot wear.</td>
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<td></td>
<td>Stair nosing fitted with anti-slip.</td>
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<tr>
<td>Ref</td>
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<td>Access and Egress</td>
<td>Opening Times: 24 hours.</td>
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<td>Who is harmed:</td>
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<td>• Staff members</td>
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<td>• Students</td>
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<td></td>
<td></td>
<td>• Visitors</td>
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<td></td>
<td></td>
<td>• Contractors</td>
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<td></td>
<td>• Young persons</td>
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<td>• Postgraduates</td>
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<td>• People with disabilities</td>
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<td>• Security threats</td>
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<td>• Threats from public</td>
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<td>• Violence / Assault</td>
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<tr>
<td></td>
<td></td>
<td>• There is no Front desk/Reception in Greenway. There is a manned desk at all times in Rathdown Building</td>
<td>Do not allow suspect individuals access.</td>
<td>With current controls: L</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
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<tr>
<td></td>
<td></td>
<td>• Sign in key system in place</td>
<td></td>
<td>With Actions applied: L</td>
<td>DIT Estates Office</td>
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<td>• Security camera</td>
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<td></td>
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<td>• Suspicious activity reported to porters</td>
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<td></td>
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<td>• See OUT OF HOURS</td>
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<tr>
<td>Ref</td>
<td>Hazard</td>
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</tr>
<tr>
<td></td>
<td>Photocopiers &amp; Printers</td>
<td>Details: All printer and photocopying is managed by Datapac. • Changing toner etc.: chemical contact • Clearing jams: burns • Not wearing gloves • Not turning off electrical supply • Incorrect disposal • Personal injury • Lack of information / training</td>
<td>• Toner / print cartridges changed by staff members who wash hands after use • Wear gloves • Turn off power before clearing jams (standard printer) • Disposal as per manufacturer’s directions • Scheduled maintenance • Correct disposal of waste cartridges • Follow manufacturer’s instructions</td>
<td>•</td>
<td>With current controls: L With Actions applied: L</td>
<td>ESHI staff and students Datapac</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Ref</td>
<td>Hazard</td>
<td>Risk(s) Associated / Description</td>
<td>Control Measures</td>
<td>Risk H/M/L (with controls)</td>
<td>Person(s) Responsible</td>
<td>Target Date / Status</td>
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<td>-----</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Ergonomics</td>
<td>Who is harmed:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Staff members</td>
<td>• MSD’s</td>
<td>Online eLearning programme available</td>
<td>With current controls: L</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Students</td>
<td>• Upper limb disorders</td>
<td>Workstation risk assessments and information and training available from the Health &amp; Safety Office on request</td>
<td>With Actions applied: L</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Visitors</td>
<td>• Poor posture</td>
<td>Contact OHO if risk assessments are required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Contractors</td>
<td>• Back problems</td>
<td>• Eye tests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Young persons</td>
<td>• Fatigue</td>
<td>• Good housekeeping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pregnant</td>
<td></td>
<td>• Cable management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Postgraduates</td>
<td></td>
<td>• Adequate services (heating, lighting ventilation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• People with disabilities</td>
<td></td>
<td>• Follow manufacturer’s instructions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### PHYSICAL

<table>
<thead>
<tr>
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</tr>
<tr>
<td></td>
<td>Mechanical Lifting Systems</td>
<td>N/A</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
|     | Vehicles/deliveries on site | There are small dit electrical vehicles accessing the entrance of ESHI and sometimes providers may park their vehicle in the | • Injury to person/struck by vehicle  
• Poor access and egress | • Safe access and egress  
• Signage  
• Full driver’s license  
• Safe parking  
• Speed limit  
• Designated walk ways  
• Designated area for loading and unloading goods  
• Report defects  
• Adequate lighting | With current controls:  
L  
With Actions applied: L | ESHI staff and students  
DIT Estates Office | Ongoing |
<table>
<thead>
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<th>Ref</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hot Surfaces / Liquids / Solids</td>
<td>• Contact burns</td>
<td></td>
<td></td>
<td>With current controls:</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Scalds</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Supervision</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Training</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

- Greenway access

- Who is harmed:
  - Staff members
  - Students
  - Visitors
  - Contractors
  - Young persons
  - Pregnant
  - Postgraduates
  - People with disabilities

- Hi Vis clothing
### Safety Statement, ESHI Research Institute

| E.g. Hot plates; Cups of hot beverages Please see Specific Hazards Risk Assessment Shaking thermostat hotplates, GC-MS ovens, pumps, furnace, drying oven. | Who is harmed:  
- Staff members  
- Students  
- Visitors  
- Contractors  
- Young persons  
- Pregnant  
- Postgraduates  
- People with disabilities | • Spillage  
• PPE  
• Signage  
• Spill kit  
• Storage  
• Heat shielding | L  
With Actions applied:  
L |

---
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<tbody>
<tr>
<td></td>
<td>Pressure Systems</td>
<td>Examples</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Boilers/steam heating systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pressure cookers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Autoclaves</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Compressed air systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Large coffee machines</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Who is harmed:</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Staff members</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Students</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Visitors</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Contractors</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Young persons</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pregnant</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Postgraduates</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• People with disabilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Contact burn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Personal injury</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Explosion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Spillage</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Release of steam/ fluid / air</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>• SOP</td>
<td></td>
<td></td>
<td>With current controls:</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Service and maintenance</td>
<td></td>
<td></td>
<td>L</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Training</td>
<td></td>
<td></td>
<td>With Actions applied:</td>
<td>DIT Estates Office</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Report defects</td>
<td></td>
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<td>L</td>
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</tbody>
</table>
### Safety Statement, ESHI Research Institute

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</tr>
</thead>
</table>
|     | Radiation  | At the moment there are not radiation hazards in ESHI. In the future there might be use of radioactive isotopes. | • Death  
• Brain damage  
• Sterility  
• Skin burn/blistering | • Health surveillance  
• Personal monitoring  
• Signage  
• Restricted access  
• Storage; sealed designated area  
• SOP use and handling  
• Specialised risk assessment  
• Training and information  
• Radon testing completed, results below the threshold values  
• Radiation Protection Officer (RPO) in place  
• SOP and risk assessment for safe disposal  
• Competent waste contractor engaged | N/A at present | With current controls:  
L  
With Actions applied:  
L | ESHI staff and students | If necessary |

**Who is harmed:**
- Staff members
- Students
- Visitors
- Contractors
- Young persons
- Pregnant
- Postgraduates
- People with disabilities
<table>
<thead>
<tr>
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<th>Target Date / Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vibration</td>
<td>None</td>
<td>●</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**PHYSICAL**

Services: Heating

Gas fired central heating in place throughout the ESHI Research Institute

<table>
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<th>Target Date / Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Services: Heating</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Gas fired central heating in place</td>
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<tr>
<td></td>
<td>throughout the ESHI Research Institute</td>
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</tr>
</tbody>
</table>
### Safety Statement, ESHI Research Institute

**Who is harmed:**
- Staff members
- Students
- Visitors
- Contractors
- Young persons
- Pregnant
- Postgraduates
- People with disabilities

**Risk(s) Associated / Description:**
- Burns
- Carbon monoxide poisoning
- Service and maintenance by competent person
- Combustible material kept away from heat source
- Heat source kept clear and free from obstruction
- Environmental monitoring from the Health & Safety Office on request
- Adequate ventilation
- Fire detection systems

### PHYSICAL

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<th>Target Date / Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lighting</td>
<td>Inadequate lighting, Glare, Slips, trips, falls</td>
<td>• Inadequate lighting</td>
<td>•压住开关向上按5秒来启动传感器（不要忘记在离开时关掉灯）</td>
<td>L</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Lighting with movement sensors.</td>
<td></td>
<td>• Light switches easily accessible (height)</td>
<td></td>
<td></td>
<td>DIT Estates Office</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hazard:</td>
<td></td>
<td>• Adequate lighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Report defects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Protective coverings</td>
<td></td>
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</tr>
</tbody>
</table>
possible tripping if working in small number in the office and the lights switch off automatically.

Who is harmed:
- Staff members
- Students
- Visitors
- Contractors
- Young persons
- Pregnant
- Postgraduates
- People with disabilities

<table>
<thead>
<tr>
<th>PHYSICAL</th>
<th>Control Measures</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>Ref</td>
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<td>Risk(s) Associated / Description</td>
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<tr>
<td>-----</td>
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<td>----------------------------------</td>
</tr>
</tbody>
</table>
|     | Ventilation and temperature | • Environment too hot or cold  
• Inadequate ventilation  
• Falls from heights from windows | • All windows openable  
• Blinds in place and in working order  
• Suitable equipment available for the opening and closing of windows  
• Report defects  
• Step ladder available for access  
• Service and maintenance of ventilation system by competent person  
• Office temperature of at least 17.5 degrees (after one hour of work)  
• Environmental monitoring from the Health & Safety Office on request | With current controls: L  
With Actions applied: L | ESHI staff and students  
DIT Estates Office | Ongoing |

**PHYSICAL**

<table>
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<tr>
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<th>Target Date /</th>
</tr>
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</table>
### Safety Statement, ESHI Research Institute

**Electricity**

<table>
<thead>
<tr>
<th>Who is harmed:</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff members</td>
<td>• Electric shock</td>
</tr>
<tr>
<td>Students</td>
<td>• Electric leads not trailing</td>
</tr>
<tr>
<td>Visitors</td>
<td>• Competent person to carry out repairs / works</td>
</tr>
<tr>
<td>Contractors</td>
<td>• All works servicing and testing is carried out as per regulations</td>
</tr>
<tr>
<td>Young persons</td>
<td>• Shut down when not in use and end of day</td>
</tr>
<tr>
<td>Pregnant</td>
<td>• Contact Estates Office if problems arise</td>
</tr>
<tr>
<td>Postgraduates</td>
<td>• Adequate protection for circuit boards, distribution boards etc.</td>
</tr>
<tr>
<td>People with disabilities</td>
<td>• Report defects, take equipment out of use</td>
</tr>
<tr>
<td></td>
<td>• Good housekeeping</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk(s) Associated / Description</th>
<th>Current Controls</th>
<th>Further Actions Required</th>
<th>Risk (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos</td>
<td>Estates Office</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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</tr>
<tr>
<td></td>
<td>Confined Spaces</td>
<td>N/A</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Ref</td>
<td>Hazard</td>
<td>Risk(s) Associated / Description</td>
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</tr>
</tbody>
</table>
|     | Lasers | None available outside a confined instrument. | ● Skin injury  
● Eye injury  
● Unauthorised access | ● Risk assessment  
● SOP for use  
● Laser beam path enclosed  
● Do not look directly at the beam  
● Beams are horizontal  
● Information and training  
● Signage on door  
● Log book  
● Eye protection, PPE  
● Hand and arm protection  
● Optical components securely clamped  
● Stray laser beams located and terminated  
● No personal jewellery | With current controls:  
L  
With Actions applied:  
L | ESHI staff and students | Ongoing |

Who is harmed:  
● Staff members  
● Students  
● Visitors  
● Contractors  
● Young persons  
● Pregnant  
● Postgraduates  
● People with disabilities
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</thead>
</table>
|     | Construction / Maintenance Work | • Unfamiliar with DIT buildings and safety procedures  
• Injury to contractors, staff, students, members of the public | • Estates Office control all contractors  
• Front desk reception available at Rathdown House  
• Sign in required  
• Compliance with DIT code of practice for contractors  
• Signage  
• eLearning  
• DIT Contractor safety badge  
• Risk assessment and method statements completed and submitted to the Estates Office  
• Good housekeeping  
• Areas of works cordoned off | With current controls: L  
With Actions applied: L | ESHI staff and students  
DIT Estates Office | Ongoing |
<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
<th>Control Measures</th>
<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Current Controls</td>
<td>Further Actions Required</td>
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**Operational Ref**

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- Slips, trips and falls
- Increased fire load
- Falling objects
- Collisions

- Fire load kept to a minimum
- All routes kept clear and unobstructed
- Wet floor signs
- Spillages cleaned immediately
- Adequate lighting
- Adequate waste disposal
- Designated storage

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**Safety Statement, ESHI Research Institute**

Cleaning
Cleaning is undertaken by Noonan Cleaners

Who is harmed:
- Staff members
- Students
- Visitors
- Contractors
- Young persons
- Pregnant
- Postgraduates
- People with disabilities

- Lack of cleanliness or hygiene
- Manual handling injury
- Exposure to hazardous substances
- Spillages: slips, trips and falls
- Lack of/inappropriate PPE

- Daily cleaning schedule
- SOP
- PPE
- Labelling
- Training and information (chemicals)
- Signage (wet floor signs)
- Storage of cleaning equipment and cleaning substances
- Use of appropriate cleaning equipment
- Report defects and hazards
- Manual handling training

With current controls: L
With Actions applied: L

ESHI staff and students
DIT Estates Office
Noonan
Ongoing
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<tr>
<td></td>
<td>Waste Disposal &amp; Removal</td>
<td>Removal of waste by Noonan Cleaners usually during cleaning Please see also Chemical &amp; Clinical Waste</td>
<td>Waste accumulation • Fire • Sharps injuries • Exposure to bodily fluids • Manual handling injury • Exposure to hazardous substances • Spillages: slips, trips and falls • Lack of/inappropriate PPE</td>
<td>Paper recycling bins present • Shredding facility present • Red/ green/ brown bins available • Dispose of waste appropriately in bins provided • Segregate waste as appropriate • Waste removed on a regular bases • Sharps bin present • Clinical waste arrangements • PPE • Instruction and training • SOP • Labelling • Log kept • Storage arrangements • Manual handling • Mechanical aids for transport e.g. trolleys</td>
<td>ESHI staff and students DIT Estates Office Noonan</td>
<td>Ongoing</td>
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<td>ESHI staff and students</td>
<td>Ongoing</td>
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<td>Incident report book available</td>
<td>With Actions applied: L</td>
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<td>Lack of knowledge of procedure in the event of an incident</td>
<td>All incidents to be reported immediately and an incident report form completed</td>
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<td>Additional supplies available from Health &amp; Safety Office on request</td>
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</tbody>
</table>
|     | Use of Ladders / Working at Height | Falls from height  
Falling objects  
Falls through fragile roofs  
Slips, trips and falls  
Manual handling injuries  
Inclement weather | Avoid if possible  
Permit to work system  
Ladder in good condition and suitable for use  
Records kept of inspection  
SOP for safe ladder use  
Report defects  
PPE  
Instruction and training  
Storage arrangements  
Manual handling  
Work restricted during inclement weather  
Adhere to HSA Codes of Practice for Safe Use of Ladders, Scaffolding and Working on Roofs | With current controls: L  
With Actions applied: L | ESHI staff and students  
DIT Estates Office | Ongoing |

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</table>
### Out of Hours Access / Lone Working

See appendix 1 for the risk assessment and SOP

Who is harmed:
- Staff members
- Students
- Visitors
- Contractors
- Young persons
- Pregnant
- Postgraduates
- People with disabilities

- Violence
- Inability to make contact in the event of an emergency etc.
- Unauthorised access

- DIT Policy in place
- Risk assessment carried out and control measures implemented
- Buddy system in place
- Structural and security controls for safe access and egress
- Mandatory training

With current controls: L
With actions applied: L

ESHI staff and students
DIT Estates Office
DIT Health & Safety Office
Ongoing
## Fieldtrips

**Who is harmed:**
- Staff members
- Students
- Visitors
- Contractors
- Young persons
- Pregnant
- Postgraduates
- People with disabilities

**Injuries**
- Medical emergencies
- Accidents and incidents
- Missing persons
- Substance abuse
- Road Traffic Accidents
- Inclement weather
- Site terrain
- Chemical
- Biological
- Human Factor

**DIT Fieldtrip Policy in place**
- Separate fieldtrip risk assessment template completed for each fieldtrip and control measures implemented
- Information provided to fieldtrip participants
- Elearning programme available to participants on request

**With current controls:**
- Trip Organiser and participants

**With Actions applied:**
- L

### OPERATIONAL

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</table>
|     | Events Hosting | Who is harmed:  
- Staff members  
- Students  
- Visitors  
- Contractors  
- Young persons  
- Pregnant  
- Postgraduates  
- People with disabilities | - Injuries  
- Accidents and incidents  
- Unfamiliar with DIT premises and emergency plans | - Risk assessment carried out and control measures implemented  
- Emergency plans in place as per risk assessment  
- Report all incidents and accidents to DIT | With current controls: L  
With Actions applied: L | Event Organiser and participants | Ongoing |
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</table>
|     | Conferences / Seminars | Who is harmed:  
  - Staff members  
  - Students  
  - Visitors  
  - Contractors  
  - Young persons  
  - Pregnant  
  - Postgraduates  
  - People with disabilities | - Travel to and from  
  - Road traffic accidents  
  - Unfamiliar with venue  
  - Medical emergency  
  - Missing persons | - Taxi vouchers available to staff  
  - Staff obey rules of the road if driving or cycling  
  - Adequate insurance, tax and NCT on vehicles used for transport  
  - Familiarise yourself with local emergency procedures and first-aid arrangements  
  - Report defects and incidents to venue management  
  - Approval sought from Line Manager as per DIT procedures | - None at present | With current controls: L | ESHI staff and students | Ongoing |
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<tbody>
<tr>
<td></td>
<td>Storage</td>
<td>Inadequate storage, Improper storage, Inadequate space for safe manual handling, Poor housekeeping, Slips, trips and falls, Unsafe access and egress, Inadequate lighting and/or ventilation</td>
<td>Safe access and egress, Storage avoided above shoulder height where possible, Items stored appropriately, Items segregated where necessary, Storage units secure and fit for purpose, Locking system in place, Step ladder available for accessing higher shelving units, Staff trained in manual handling</td>
<td>With current controls: L, With Actions applied: L</td>
<td>With current controls: L</td>
<td>ESHI staff and students, DIT Estates Office</td>
<td>Ongoing</td>
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</tbody>
</table>
### Safety Statement, ESHI Research Institute

- Appropriate signage in place
- Items not stored in walkways
- Defects reported
- Adequate lighting and ventilation

### HUMAN FACTORS

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<th>Target Date / Status</th>
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</thead>
</table>
|     |        | Sensitive Work Groups: Pregnant Employees / Students & Nursing Mothers | • Harm to Mother, unborn child or breastfeeding baby  
• Physical risks  
• Chemical risks  
• Biological risks | • Risk assessment carried out for pregnant employees/students and control measures implemented as identified and necessary by Health & Safety Office  
• Room available for expressing milk  
• Follow medical advice | With current controls: L  
With Actions applied: L | ESHI staff and students | Ongoing |
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<td>Sensitive Work Groups: People with Disabilities</td>
<td>• Lack of access/egress • Difficulty with evacuation • No risk assessment (RA) completed</td>
<td>• Risk Assessment carried out by Health &amp; Safety Office • Personal Emergency Egress Plan (PEEP) completed where necessary • Reasonable accommodation identified in risk assessment • Lift present and in working order • Disability Support Service available</td>
<td></td>
<td>With current controls: L With Actions applied: L</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
<td></td>
</tr>
</tbody>
</table>
### Human Factors

<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
<th>Control Measures</th>
<th>Further Actions Required</th>
<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sensitive Work</td>
<td>Lack of experience&lt;br&gt;• Lack of experience&lt;br&gt;• Lack of training&lt;br&gt;• Injuries&lt;br&gt;• Accidents and incidents&lt;br&gt;• Lack of training and experience&lt;br&gt;• Lack of familiarity with DIT work environment, work practices and emergency plans</td>
<td>Induction available (in person or online)&lt;br&gt;Line Manager gives induction for department&lt;br&gt;Mandatory training to be completed as soon as possible after recruitment&lt;br&gt;SOP&lt;br&gt;Supervision</td>
<td>With current controls: L&lt;br&gt;With Actions applied: L</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
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<tr>
<td></td>
<td>Groups: New Recruits</td>
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<tr>
<td>Ref</td>
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<td>Person(s) Responsible</td>
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<td>With current controls: L</td>
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<td>Ongoing</td>
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</table>

Sensitive Work Groups:
Undergraduates
Are there undergraduates?
<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
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<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
</table>
|     | Sensitive Work Groups: Postgraduates | • Lack of experience  
• Lack of training  
• Injuries  
• Accidents and incidents  
• Lack of familiarity with DIT work environment, work practices and emergency plans  
• Lone working | • Induction available (in person or online)  
• Supervisor gives induction for department or from the Health & Safety Office  
• Mandatory training to be completed as soon as possible after recruitment  
• SOP's in place for activities  
• Supervision  
• Out of hours policy and procedures in place | | With current controls: L  
With Actions applied: L | ESHI staff and students | Ongoing |
<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
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<th>Person(s) Responsible</th>
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<tbody>
<tr>
<td></td>
<td>Stress</td>
<td>Who is harmed:</td>
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<td>• Contractors</td>
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<td></td>
<td>• Young persons</td>
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<td>• Pregnant</td>
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<td>• Postgraduates</td>
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<td></td>
<td></td>
<td>• Physical health effects</td>
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<td>• Communication</td>
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<td>ESHI staff and</td>
<td>Ongoing</td>
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<td></td>
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<td>• Mental health effects</td>
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<td>between staff and</td>
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<td>students</td>
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<td>• Behavioural effects</td>
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<td>management</td>
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<td>DIT HR</td>
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<td>• Cognitive effects</td>
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<td>• Employee Assistance</td>
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<td>• Workload</td>
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<td>Programme (EAP) in place</td>
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<td>• Occupational Stress</td>
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<td>Management, personal</td>
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<td>skills etc. to staff</td>
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<td>Ref</td>
<td>Hazard</td>
<td>Risk(s) Associated / Description</td>
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<td>Risk H/M/L (with controls)</td>
<td>Person(s) Responsible</td>
<td>Target Date / Status</td>
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</tbody>
</table>
|     | Violence (including Cash) | Is there ever cash? | Who is harmed:  
- Staff members  
- Students  
- Visitors  
- Contractors  
- Young persons  
- Pregnant  
- Postgraduates  
- People with disabilities |  
- Theft  
- Attacks/assault  
- Emergency Response Training (ERT) mandatory for staff  
- SOP for handling, storage and transport of cash  
- CCTV  
- Porters on duty  
- DIT staff and students report suspect individuals to DIT Estates Office  
- Adequate lighting  
- Physical barriers e.g. partitions | With current controls:  
- L  
- With Actions applied:  
- L | ESHI staff and students | Ongoing |

Current Controls | Further Actions Required | Risk H/M/L (with controls) | Person(s) Responsible | Target Date / Status |
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<th>Ref</th>
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<th>Risk(s) Associated / Description</th>
<th>Control Measures</th>
<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
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</table>
|     | Violence (including Cash) | Is there ever cash? | Who is harmed:  
- Staff members  
- Students  
- Visitors  
- Contractors  
- Young persons  
- Pregnant  
- Postgraduates  
- People with disabilities |  
- Theft  
- Attacks/assault  
- Emergency Response Training (ERT) mandatory for staff  
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- CCTV  
- Porters on duty  
- DIT staff and students report suspect individuals to DIT Estates Office  
- Adequate lighting  
- Physical barriers e.g. partitions | With current controls:  
- L  
- With Actions applied:  
- L | ESHI staff and students | Ongoing |
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<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bullying &amp; Harassment</td>
<td>Who is harmed: • Staff members • Students • Visitors • Contractors • Young persons • Pregnant • Postgraduates • People with disabilities</td>
<td>• Effects on physical and mental well-being</td>
<td>• DIT Dignity at Work: Anti Bullying &amp; Harassment Policy in place  • Dignity at Work contact persons available  • Employee Assistance Programme (EAP) in place  • DIT Procedure for complaints and investigations  • Student support services available</td>
<td>• With current controls: L  With Actions applied: L</td>
<td>ESHI staff and students  DIT HR</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Ref</td>
<td>Hazard</td>
<td>Risk(s) Associated / Description</td>
<td>Control Measures</td>
<td>Further Actions Required</td>
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<tr>
<td>Welfare Facilities: Sanitary Facilities; Staffroom / Canteen</td>
<td>Inadequate facilities, No potable water, No means for boiling water / heating food, No seating / resting area, No hand-washing facilities</td>
<td>Staffroom/canteen present with seating facilities, Drinking water available, Hot and cold water available in sanitary facilities, Disabled toilet available, Adequate sanitary facilities available, Hand washing facilities adequate.</td>
<td></td>
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</tr>
<tr>
<td>Who is harmed: Staff members, Students, Visitors, Contractors</td>
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<td></td>
<td>Ongoing</td>
<td></td>
</tr>
</tbody>
</table>

There are gender neutral sanitary facilities in the whole building, one social room and one kitchenette. There is a canteen available in Rathdown house.
<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
<th>Control Measures</th>
<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
</table>
| Visitors | Types of visitors: Event Participants; Erasmus Students, Academic | • Lack of experience  
  • Lack of training  
  • Injuries  
  • Accidents and incidents  
  • Lack of familiarity with DIT work environment, work practices and emergency plans | • Front desk/Reception is manned at all times in Rathdown Building  
  • Porters on duty  
  • Visitors report to Front desk/Reception  
  • Safety booklets and safety wallet cards available  
  • Signage  
  • Risk assessments completed for specific events where groups of visitors are expected  
  • Swipe card system | With current controls: L  
  With Actions applied: L | ESHI staff and students  
  DIT Estates Office | Ongoing |
### HUMAN FACTORS

<table>
<thead>
<tr>
<th>Ref</th>
<th>Hazard</th>
<th>Risk(s) Associated / Description</th>
<th>Control Measures</th>
<th>Risk H/M/L (with controls)</th>
<th>Person(s) Responsible</th>
<th>Target Date / Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractors / Service Providers</td>
<td>Unfamiliar with DIT buildings and safety procedures</td>
<td>Estates Office control all contractors</td>
<td>With current controls: L</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Injury to contractors, staff, students, members of the public</td>
<td>Front desk/Reception is manned at all times in Rathdown Building</td>
<td></td>
<td>DIT Estates Office</td>
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<td></td>
<td></td>
<td>Sign in required</td>
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<td>Compliance with DIT Code of Practice for Contractors</td>
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<td></td>
<td></td>
<td>Signage</td>
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<td>elearning</td>
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<td>DIT Contractor safety badge</td>
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<td></td>
<td></td>
<td>Risk assessment and method statements</td>
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<tr>
<td>Ref</td>
<td>Hazard</td>
<td>Risk(s) Associated / Description</td>
<td>Control Measures</td>
<td>Further Actions Required</td>
<td>Risk H/M/L (with controls)</td>
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</tr>
</tbody>
</table>
|     | Behaviour | • Aggression  
Who is harmed:  
• Staff members  
• Students  
• Visitors  
• Contractors  
• Young persons  
• Pregnant  
• Postgraduates  
• People with disabilities | • DIT Dignity at Work: Anti Bullying & Harassment Policy in place  
• Employee Assistance Programme (EAP) in place  
• Occupational Stress Management Policy & Procedures in place  
• Training courses available on Stress Management, personal skills etc. to staff | • Follow procedures in DIT’s Dignity at Work: Anti Bullying & Harassment Policy  
• Follow out of hours risk assessment and procedure | With current controls: L  
With Actions applied: L | ESHI staff and students | Ongoing |
All incidents are reported immediately
- DIT Disciplinary procedures in place
- DIT Procedure for the Resolution of Disputes/Grievances in place

<table>
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<tbody>
<tr>
<td></td>
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<td></td>
<td>Current Controls</td>
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<td></td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

**HUMAN FACTORS**

**Personal Protective Equipment (PPE)**

PPE used:
- Lab coat
- Safety glasses
- Gloves
- Face shield

- Improper fit and use
- Incorrect type
- Poor maintenance
- Lack of training
- Exposure to physical or hazardous substances
- Slips, trips and falls
- Lack of awareness of PPE requirements
- Contamination

- Appropriate selection of PPE
- Consultation with staff
- Inspection and maintenance
- Cleaning arrangements
- Defects reported
- Storage
- Training, information and supervision
- Signage
- Follow manufacturer's instructions
- Personal use only

With current controls: L

With Actions applied: L
<table>
<thead>
<tr>
<th>Ref</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Note types of chemicals in use e.g. Liquids, solids, powders</td>
<td>Skin contact, Ingestion, Inhalation, Environmental damage, Contamination, Spillage</td>
<td>Substituted with less hazardous chemicals where possible, Specific chemical risk assessments carried out, SOP for use, handling, storage and disposal, PPE, MSDS, Signage</td>
<td>With current controls: L</td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

Who is harmed:
- Staff members
- Students
- Visitors
- Contractors
- Young persons
- Pregnant
- Postgraduates
- People with disabilities

Who is harmed:
- Skin contact
- Ingestion
- Inhalation
- Environmental damage
- Contamination
- Spillage

- Substitute with less hazardous chemicals where possible
- Specific chemical risk assessments carried out
- SOP for use, handling, storage and disposal
- PPE
- MSDS
- Signage

- With current controls: L
- With Actions applied: L
### Safety Statement, ESHI Research Institute

- Staff members
- Students
- Visitors
- Contractors
- Young persons
- Pregnant
- Postgraduates
- People with disabilities

- Spill Kit
- Emergency plans
- First-aid arrangements
- Adequate ventilation
- Training, information and supervision
- Restricted access
- Minimum quantities on site

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### CHEMICAL

<table>
<thead>
<tr>
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</table>

Who is harmed:
- Staff members
- Students
- Visitors
- Contractors

- Leak
- Fire
- Suffocation
- Carbon monoxide
- Explosion

- Inspection, Testing and Maintenance/Servicing
- Cylinder use and handling
- Detection and monitoring systems
- Adequate ventilation
- Training
- SOP
- Procurement
- Registered installer
- Training, information and supervision

With current controls: L

With Actions applied: L

ESHI staff and students

Ongoing
### BIOLOGICAL

<table>
<thead>
<tr>
<th>Ref</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Biological Agents</td>
<td>• Skin contact</td>
<td>• Class B biological agents notified to the Health &amp; Safety Authority</td>
<td>With current controls: L</td>
<td></td>
<td>ESHI staff and students</td>
<td>Ongoing</td>
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<td></td>
<td></td>
<td>• Ingestion</td>
<td>• Specific biological risk assessments carried out</td>
<td>With Actions applied: L</td>
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<td></td>
<td></td>
<td>• Inhalation</td>
<td>• SOP for use, handling, storage and disposal</td>
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<td>Who is harmed:</td>
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<td>• PPE</td>
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<td>• Staff members</td>
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<td>• Students</td>
<td>• Spill Kit</td>
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<td>• Visitors</td>
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<td></td>
<td>• Contractors</td>
<td>• First-aid arrangements</td>
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<td>• Young persons</td>
<td>• Adequate ventilation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pregnant</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduates</td>
<td>People with disabilities</td>
<td>Training, information and supervision</td>
<td>Restricted access</td>
<td>Minimum quantities on site</td>
<td></td>
<td></td>
<td></td>
</tr>
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</tbody>
</table>
APPENDIX 1

ESHI RESEARCH INSTITUTE SPECIFIC HAZARDS RISK ASSESSMENT

1. Hazard: Use of Chemical Agents/Substances
2. Hazard: Storage of Chemical Agents/Substances
3. Hazard: Transport of Chemical Agents/Substances
5. Hazard: Fumehoods/Fume Cupboards
6. Hazard: Mass Spectroscopy suite
7. Hazard: Biological Agents
8. Hazard: Sharps, Surgical Blades, Syringes etc.
9. Hazard: Microwave digester and furnace
10. Hazard: Bunsen Burners
11. Hazard: Rubber and Plastic Tubing
13. Hazard: Spillages
14. Hazard: Microscopes
15. Hazard: Water Baths
16. Hazard: Glassware
17. Hazard: Hot Plates & Heat Stirrers
18. Hazard: Ultra Violet Light Sources (UV Light Box) & Trans-Illuminator
19. Hazard: Autoclave
20. Hazard: Chemical Laboratory Areas
21. Hazard: Biological Laboratory Areas
22. Hazard: PC Controlled Bench Top Instruments
23. Hazard: Lone Working and Out of hours access

APPENDIX 2

ESHI Research Institute SOP

1. SOP Waste Disposal
2. SOP Spills
3. SOP Fire evacuation
4. SOP Fumehoods
5. SOP Instruments

APPENDIX 1
1. **Hazard: Use of Chemical Agents/Substances**

**Risks**
- Illness, injuries from exposure

**Control Measures**

**General**
- Chemical agents risk assessments will be carried out for activities which are of such a duration or so frequently performed or involving such hazardous chemicals as to pose a risk of exposure to staff or students. Following the risk assessment measures may be specified to ensure that the risk is reduced to the lowest possible level. Measures may include substitution of one chemical for a less hazardous one, restricting the number of persons using or in contact with the chemical, engineering controls such as the use of a fume hood, training or the use of personal protective equipment.

- Each laboratory must keep an up to date printed copy of all safety data sheets (SDS) for chemicals stored or used in that laboratory. When new chemicals are ordered, the relevant SDS should be requested from the supplier. The SDS must be readily available to all laboratory users.

- Before new chemicals are ordered, personnel must ensure that safer alternatives have been investigated. A safer alternative could be purchasing a solution rather than making up a stock from a hazardous dust.

- Personnel must be familiar with the contents of the SDS and bring to the attention of others the hazards associated with the chemicals.

- Personnel must be aware of the spillage clean up procedures for the chemicals they use on a regular basis. Spill kits are supplied in each laboratory.

- Laboratory co-ordinators should have a list of the toxic chemicals in their laboratory and make sure they are stored appropriately.

- First-aid kits, eyewash stations and trained first-aiders are available in each laboratory.

- All personnel with access to the ESHI Research Institute are required to have first aid, manual handling and emergency response training.

**General storage of chemicals**
- Ensure that all containers are in good condition, properly capped, and properly labelled.

- There should be no unlabelled container, and NO container should ever be labelled using the word WASTE or SPENT.

- Solutions or chemicals stored in containers other than their original container or waste must be labelled with the name of the chemical, the concentration if relevant, the hazard warning (e.g. toxic, corrosive, flammable etc.), the name of the person responsible for making up the solution, the date the solution was made up and expiry date.

- Store incompatible chemicals separately. Safety Data Sheets also provide information on incompatibility.

- Do not store chemicals in alphabetical order without consideration for chemical compatibilities. An alphabetical system may cause incompatible materials being stored next to one another (e.g. butadiene next to bromine or chlorine).
Flammables

Flammable and combustible chemicals are materials which, under standard laboratory conditions, can generate sufficient vapours to cause a fire in the presence of an ignition source. Materials which generate sufficient vapours to ignite at temperatures below 38°C are "flammables," whereas materials that require temperatures above 38°C to provide sufficient vapours for ignition are "combustibles."

The following precautions should be observed when using these materials:

- Flammable materials must be stored in a flammables cabinet. The door of the cabinet should be kept closed when not in use.
- Segregate flammables from oxidizing acids and oxidizers.
- Volumes of flammables stored should be kept to a minimum.
- Consideration should be given to letting the supplier deliver flammables ‘just in time’.
- Flammables in glass Winchesters should not be left on the bench in sunlight as they are likely to reach their flash point and cause an explosion and fire.
- Flammables must not be stored in fume hoods where there is a bunsen burner or other heat source.
- Secure screw caps on containers immediately following dispensing.
- Do not dispense into beakers and leave at bench top level. Flammables and combustibles should be placed in a fume hood as soon as possible and used.
- Do not allow flammable liquids to evaporate in a fume hood as a means of disposal.
- Eliminate ignition sources such as open flames, hot surfaces, operation of electrical equipment, and static electricity from areas in which flammable or combustible materials are used or stored.
- Refrigerators and freezers used for the storage of flammable and combustible liquids must be non-sparking (Ex rated).
- Ensure that there is proper bonding and grounding when transferring between metal containers or dispensing a flammable liquid from a large container or drum.

Personal Protective Equipment

- Safety glasses must be worn at all times in the laboratories containing hazardous chemicals.
- Laboratory coats must be worn at all times when using hazardous chemicals.
- Where there is a risk of a hazardous chemical splashing into the eyes, safety glasses must be worn with side protection. Ordinary corrective spectacles do not provide sufficient protection. Staff who wear spectacle will be provided with safety glasses that fit over their own glasses or prescription safety glasses.
- Laboratory co-ordinators must ensure that personnel wear appropriate eye protection.
- Contact lens wearers should alert laboratory co-ordinators to that fact so that appropriate first-aid can be provided in the event of an eye injury.
- Laboratory co-ordinators should ensure that the correct types of gloves are selected for work with hazardous chemicals. Latex gloves are not used in laboratories.

Safety Equipment

- Where eyewash basins are installed, these must be tested at least once per term. It is good practice to operate the eye wash station at least once per week.
- Eye wash bottles must be checked regularly to ensure they are in date. If the seal is broken the bottle must be replaced.
• Fume hood efficiency will be tested on an annual basis by registered contractor

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

2. Hazard: Storage of Chemical Agents/Substances
   Storage includes:

   • Laboratory Chemical Presses

Risks:
   • Fire
   • Explosion
   • Reactions due to incompatible chemicals/solvents etc.
   • Slips, trips and falls
   • Incorrect use of substances due to incorrect labelling

Laboratory Chemical stores
   • Chemicals are stored to a prescribed segregation protocol based on the UN system
   • Flammable materials are stored in flame-proof cabinets in chemical stores
   • Small volumes of solvents are kept in metal cabinets in storage areas in labs
   • Incompatible chemicals are stored separate from each other

Cleaning Chemicals
   • Toilet cleaners etc. are stored in designated areas
   • Employees are instructed to read labels and adhere to the safety precautions prescribed

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Staff and Students
Target Date/Status: Ongoing

3. Hazard: Transport of Chemical Agents/Substances

Risks:
   • Exposure to chemicals

Control Measures:
• PPE such as white lab coat and safety glasses worn and students are supervised
• Gloves are worn where necessary
• Hazardous substances are transited in a suitable container

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

4. **Hazard: Chemical & Clinical Waste/Disposal**

- **Solid waste** e.g. contaminated gloves, paper towels, cotton wool, disposable loops, tissue culture bottles, Petri-dishes, flasks and disposable pipettes etc.
- **Liquid waste** e.g. solvents, microbiological waste, aqueous waste
- **Sharps** e.g. broken glass, pipettes, scalpel blades, small glass vials, tips and ampoules, sharp pieces of metal
- **Mixed wastes** e.g. Biohazard waste containing solvents

**The following bags/containers are used in the ESHI Research Institute:**

**Yellow** Contaminated (hazardous) waste
**Black** Uncontaminated waste
  • **Black Bags**

Black bags are used for uncontaminated waste such as instrument printouts and paper which has not come into contact with blood. These are incinerated. No glass or sharps must be placed in these bags.
  • **Sharps Container**

All sharps (including broken glass, needles) must be placed in sharp bins. Do not overfill the containers as this makes it impossible to close them in a safe manner. These are incinerated.
  • **Incineration**

All waste for incineration (GMO and carcinogenic material) is will be disposed in the appropriate biohazard bins where it will be collected directly by the waste management company for incineration. They are labelled with numbered tags provided by the company. Maintenance assign numbered tags to the laboratories which are logged.
  • **Glass**

Large items of used uncontaminated glass are placed in a container for collection by a buildings maintenance management.

**Risks:**
• Cuts from sharps e.g. pipettes, slides etc.
• Incorrect storage of waste materials
• Contamination
• Infection
• Spillages, slips, rips and falls
Accumulation of materials on benches, floors etc. leading to slips, trips and falls

**Control Measures:**

**General**
- Contaminated waste is placed in an approved UN biohazard bag or sharps bin
- Hazardous waste is tracked by the laboratory co-ordinator
- All waste chemicals are disposed of using an accredited disposal company and the C1 cert is retained by the person requesting the disposal and a copy given to the safety representative.
- Waste is stored in labelled bins in the foyer until removal by the buildings maintenance management
- A copy of documentation from the waste management company is kept on file in the ESHI Research Institute by the person requesting the disposal and a copy given to the safety representative
- When purchasing chemicals, attention should be paid as to how waste will be disposed of. Volumes purchased should be kept to a minimum to prevent the build up of surplus chemicals for disposal.
- Waste chemicals must be noted in the waste manifest in the laboratory with the chemical name(s), concentration and hazard warning label as well as the name of the person responsible for production/disposal of the waste.
- Flammable wastes should be stored in a flammables cabinet
- Do not dispose of hazardous waste down the drains
- Heavy metals should not be mixed with oil or waste solvents
- Do not mix aqueous waste with organic solvent-based waste
- Paper, gloves, cardboard, and other solid materials must not be mixed in with liquid wastes
- Hazardous waste must not be allowed to accumulate in laboratories. The laboratory co-ordinator should arrange for disposal with ESHI on a regular basis
- Non-hazardous chemicals such as buffers may be washed down the drain
- Chemical waste can be mixed only if the chemicals are compatible and will not result in a hazardous reaction

**Segregation of Wastes**
Waste for disposal should be divided into the following categories:
- Neutralised waste
- Chlorinated solvents
- Non-chlorinated solvents
- Mercury wastes
- Oxidizing agents
- PCB wastes
- Reactive chemicals
- Waste oil
- Wastes with heavy metal contamination

The proper segregation of waste chemicals is essential to promote safe storage of those chemicals as well as to facilitate the economical disposal of the chemicals. The list below sets out potentially incompatible wastes, waste components, and material along with the harmful consequences of mixing those materials.
together. This list does not include every possible hazardous chemical reaction, but should only be used as a guide. The list indicates the potential consequences of the mixing of a **Group A** material with a **Group B** material. The lists of chemicals in Groups A therefore should be kept separate from those chemicals in Groups B: See table

<table>
<thead>
<tr>
<th>Group 1-A</th>
<th>Group 1-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bases</td>
<td>Acids</td>
</tr>
</tbody>
</table>

*Potential consequences: Heat generation; violent reaction*

<table>
<thead>
<tr>
<th>Group 2-A</th>
<th>Group 2-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium</td>
<td>Any Acid or Bases</td>
</tr>
<tr>
<td>Beryllium</td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td></td>
</tr>
<tr>
<td>Lithium</td>
<td></td>
</tr>
<tr>
<td>Magnesium</td>
<td></td>
</tr>
<tr>
<td>Potassium</td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td></td>
</tr>
<tr>
<td>Zinc powder</td>
<td></td>
</tr>
<tr>
<td>Other reactive metals and metal hydrides</td>
<td></td>
</tr>
</tbody>
</table>

*Potential consequences: Fire, Explosion, or generation of flammable hydrogen gas.*

<table>
<thead>
<tr>
<th>Group 3-A</th>
<th>Group 3-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols</td>
<td>Any Concentrated Acids or Bases</td>
</tr>
<tr>
<td>Water</td>
<td>Calcium</td>
</tr>
</tbody>
</table>

*Potential consequences:* Fire, Explosion, or heat generation: generation of flammable or toxic gases.

<table>
<thead>
<tr>
<th>Group 4-A</th>
<th>Group 4-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols</td>
<td>Any Concentrated Acids or Bases</td>
</tr>
<tr>
<td>Aldehydes</td>
<td>Reactive Metals and Metal Hydrides</td>
</tr>
<tr>
<td>Halogenated hydrocarbons</td>
<td></td>
</tr>
<tr>
<td>Nitrated hydrocarbons</td>
<td></td>
</tr>
<tr>
<td>Unsaturated hydrocarbons</td>
<td></td>
</tr>
<tr>
<td>Other organic compounds and solvents</td>
<td></td>
</tr>
</tbody>
</table>

*Potential consequences: Fire, Explosion, or violent reaction.*
<table>
<thead>
<tr>
<th>Group 5-A</th>
<th>Group 5-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanide's and sulphide’s</td>
<td>Any Acids</td>
</tr>
</tbody>
</table>

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulphide gas.

<table>
<thead>
<tr>
<th>Group 6-A</th>
<th>Group 6-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorates</td>
<td>Acetic acid and other organic acids</td>
</tr>
<tr>
<td>Chlorine</td>
<td>Concentrated mineral acids</td>
</tr>
</tbody>
</table>

Chlorites
chromic acid
Hypochlorites
Nitrates
Nitric acid, fuming
Perchlorates
Permanganates
Peroxides
Other strong oxidizers

Potential consequences: Fire, Explosion, or violent reaction.

The following two groups are added to facilitate the economical disposal of the wastes. They are not necessarily reactive.

<table>
<thead>
<tr>
<th>Group 7-A</th>
<th>Group 7-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy metal Compounds containing arsenic, barium, cadmium, chromium, lead, selenium, silver Polychlorinated biphenyls (PCBs) Dioxins Mercury Containing Compounds</td>
<td>Flammable Liquids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 8-A</th>
<th>Group 8-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polychlorinated biphenyls (PCBs) Dioxins Mercury Containing Compounds</td>
<td>All other chemicals and each other</td>
</tr>
</tbody>
</table>
Avoiding smells from drains:

- Much distress can be caused by smells from drains due to volatile solvents and smelly substances entering the drains.
- Please think about what is going down your drain - especially drains in fume-hoods as you may be unaware of the smell that is escaping.
- Laboratory Co-ordinators should make sure that sink and drain traps are refilled regularly with water to prevent drain odours escaping.

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

5. Hazard: Fume Hoods/Fume Cupboards

Risks
- Exposure of personnel to hazardous substances because of incorrect use, fan failure, filter blockage, spillages, accumulation of materials in the fumehood, etc.

Control Measures
- Personnel are trained in the use of the fumehood
- Personnel receive safety induction from laboratory co-ordinator
- Risk Assessments are completed for hazardous tasks carried out in the fumehood: indicated in the CRA
- All incidents, including defects, are reported to the laboratory co-ordinator (who is trained in first-aid) and an incident report form completed
- Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory
- Fumehoods are classified and given a hazard use rating in accordance with this table:

<table>
<thead>
<tr>
<th>HAZARD RATING*</th>
<th>Exposure Limit (ppm or g/m³)</th>
<th>Minimum Face Velocity (m/sec.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 - Slight</td>
<td>Over 100</td>
<td>0.4 - 0.6</td>
</tr>
<tr>
<td>Class 2 - Moderate</td>
<td>5 – 100</td>
<td>0.5 - 0.75</td>
</tr>
<tr>
<td>Class 3 - High</td>
<td>Under 5</td>
<td>0.7 - 1.0</td>
</tr>
</tbody>
</table>

*Note: This rating may be revised with the issue of the new British Standard for Fumehoods/Cupboards

For the above classification scheme to work, it is necessary to know the face velocity of a particular fumehood, in order that its classification can be assessed. Once this has been done, a notice can be affixed to the front and side of the fumehood, indicating its average face velocity at various sash heights, together
with an indication of some of the substances which can be used therein to give a general indication to staff of its suitability for different categories of hazardous substances.

- It must be possible to close the sash quickly without any risk of disturbing the apparatus within the fumehood.
- The sash opening is not set above that at which the face velocity has been measured.
- Air flow meters and fan failure warning devices are incorporated into each fumehood.
- The sash shall be kept closed at all times except during set up procedures.
- Hazard warning signs are posted in the laboratory when hazardous operations are in progress.
- The rate of release of toxic or flammable vapours is minimised by experimental design or by the use of reduced amounts of reagents.
- All fumehoods conform to latest BS-EN specification and are maintained to the same standard.
- Face velocities at the fumehood entrance, at maximum opening, shall be tested regularly, recorded and should be no less than 0.5m/sec averaged out over the opening. (Ensure that the supply of air to the room is also in excess of the total exhaust of all hoods plus the general room exhaust).
- A preventative maintenance programme is carried out by a registered contractor annually. In case of fire in the fumehood, the fumehood must be turned off.
- No work is carried out in a fumehood that is used or rated as a ventilated storage cabinet (i.e. airflow <0.4mls) or has unnecessary equipment stored within.
- The laboratory co-ordinator or researcher involved ensures the fumehood is suitable for the chemicals being used e.g. volatile oxidants, Perchloric acid or perchlorates. Hoods designated for these chemicals shall be clearly marked.
- Spillages in the fumehood are cleaned up immediately using the correct procedure by a competent staff member.
- Fume cupboards should never be used as ventilated storage areas for chemicals. The proper functioning of fume hoods depends on a free flow of air through the unit and bottles, boxes, and equipment prevent this from occurring. (If chemicals must be stored, install ventilated shelves beneath the fumehood).

- Do not block the area at the back or the front airfoil with bench liner material or other objects.
- Apparatus located within the fumehood shall be raised to allow free air passage under it e.g. via legs or using blocks.
- Factors that may adversely reduce the efficiency of the cupboard e.g. location near a door, passing traffic, incorrect sash position, storage of materials and equipment inside, use of centrifuge, hot plate or heat sources etc. must be considered.
- After use:
  - Correct shutdown is carried out.
  - The fan is run with the sash closed for a suitable period before switching off fumehood.
  - All services are turned off and all substances/reagents returned to their designated storage area.
  - All apparatus is removed and cleaned before replacement in designated area.
  - Personnel are trained in manual handling and apply their training.

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing
6. **Hazard: Gas Chromatography Mass Spectrometer**

**Risks**

- Fire as a result of high temperatures of manifold on Mass Spectrometer and from oven
- Electrical: risk of electric shock and subsequent serious injury during maintenance/repair
- Chemical exposure from use of solvents
- Burns as a result of contact with oven

**Control Measures**

- All incidents are reported to the laboratory co-ordinator (who is trained in first-aid) and an incident report form completed
- Trained first aiders and a first-aid kit are available in the laboratory
- All personnel wear PPE such as laboratory coat and safety glasses
- Students are instructed on the use of the instrument prior to use
- Instrument is serviced and service records are available in CREST
- Correct storage of all chemicals used by instrument
- Area around instrument is kept tidy allowing access at all times
- Only qualified personnel operate machine
- The Helium gas *must* be left on at all times to preserve the column

Risk: H/M/L:

With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

7. **Hazard: Biological Agents**

**Groups of Biological Agents used by ESHI include:**

*GROUP 1 BIOLOGICAL AGENT*: One which is unlikely to cause human disease.

Group 1 biological agents rely on standard microbiological practices with no special primary or secondary barriers, other than a sink for hand washing.

*GROUP 2 BIOLOGICAL AGENT*: One which can cause human disease and might be a hazard to employees.

Group 2 biological agents rely on standard microbiological practices and access restricted to nominated workers only. Design of laboratories and containment level is according to Safety, Health and Welfare at Work (Biological Agents) Regulations, 1994 & amendment regulations, 1998.

A range of potentially infectious agents are isolated in the laboratories of ESHI. A list of frozen cultures used is set out in the appendices.

Serum and equine blood samples supplied by commercial manufacturers are screened for infectious agents at time of issue. Blood samples that are collected from Hospital Pathology Departments are also screened at time of issue. Hospitals screen for Hepatitis B and HIV. Screening does not mean the sample is truly negative. It is just negative at time of issue. Precautions are in place in laboratories.
Modes of Transmission
There are several routes of transmission for infectious agents. Staff and students should be aware of the routes as prevention of transmission is critical to good control.

- Inhalation
A variety of agents infect by the respiratory route. This can be caused by aerosolisation of the agent. An aerosol may be generated during a lab procedure.

- Ingestion
Some organisms are enteric pathogens and can infect by being eaten or drunk. Hand-to-mouth contamination may occur. Inanimate objects such as the telephone, pens, and pencils, may also become contaminated. When an individual touches these items they may pick up the agent and it may gain entry through the mouth or the mucous membranes if touched.

- Penetration
Some agents may gain entry into the body through accidental penetration. This could be by needle sticks, cuts with contaminated sharp objects, broken glass, scalpels, razor blades, or animal bites or scratches. Agents may also enter the body through previous penetrations or openings in the skin, such as open wounds, chapped skin, or skin conditions such as dermatitis and eczema. Certain agents may also enter the body through the mucous membranes of the eyes, nose, or mouth.

Risks:
Infection, disease, food poisoning etc. resulting from exposure by:

- Ingestion
- Skin contact
- Eye contact
- Inhalation
- Inoculation

Control Measures:
- The Health & Safety Authority (HSA) is notified 30 days prior to commencement (for the first time) of Groups 2 Biological Agents
- Specific biological risk assessments carried out at local level per experiment and before use
- Commercial reagents are handled and stored according to manufacturer’s instructions. All cell, serum or plasma samples of commercial origin have been screened for Hepatitis B & C, HIV & II and were found to be negative (see package insert)
- Blood samples are taken from hospitals: SOP for Preparation & Transport of Blood in place
- SOP/Protocol in place for the Handling of Biological Specimens
- Great care has to be taken when collecting samples from hospitals as they are not routinely screened. They are handled in accordance with safety protocols used in the hospital service. Samples are placed in a plastic bag and sealed. Samples are logged in a book under Name: Hospital No: DIT identification no., date. When samples are discarded into the cin bin this is logged in the book. Students are made aware that these are hospital samples.
- For designated lab practicals, freshly taken blood samples are required from both students and staff. One member of staff will undertake training for phlebotomy procedures. One part-time staff member is trained to undertake phlebotomy. Refer to the SOP for obtaining blood samples
- Biohazard signage is in place on doors of labs containing Group 2 Biological Agents
- Hepatitis B vaccinations available to exposed staff
- SOPs in place for use, handling, storage and disposal
- PPE used/worn: lab coat, safety glasses, gloves
- Designated lockers for personal belongings
- Lab safety rules communicated by each lecturer and strictly adhered to
Safety Statement, ESHI Research Institute

- Signage in place
- Spill kits available
- Use of fumehood/BSC where required
- Emergency plans in place
- All lab staff trained in first-aid, first-aid kit in each lab
- All incidents are reported to lecturer/technician
- Adequate ventilation and storage of chemicals
- Training, information and supervision given to students
- Restricted access: students only permitted when staff are present
- Minimum quantities of substances on site
- Adequate handling and disposal of sharps: sharps container present and students instructed in use of same
- Disposal containers located close to each bench to reduce travelling/spillages
- Adequate cleaning of trays used for dissection
- Disinfection materials available on each bench at all times
- Surfaces disinfected after each lab session
- Labs cleaned after each session to reduce contamination
- Sterilisation of equipment
- Hand-washing facilities available in all labs
- Students instructed and supervised in correct techniques, hygiene, PPE, use of substances, hand-washing etiquette (washing and drying before and after labs) equipment etc.
- Eyewash station & emergency shower available in relevant labs
- No eating and drinks permitted
- Correct labelling of all materials, specimens and substances
- SDS available for chemicals in each lab

Hazard: Sharps, Surgical Blades, Syringes etc.

Risks
- Cuts, lacerations and punctures of the skin from careless handling, usage or disposal
- Infection from hazardous chemicals or organisms entering the body

Control Measures
- All incidents (cuts, lacerations, punctures etc. of the skin) are reported to the laboratory co-ordinator (who is trained in first-aid) and an incident report form completed.
- Trained fist aiders and a first-aid kit are available in the laboratory
- Personnel are instructed and supervised in the use of sharps/instruments e.g. razor blades, scalpel blades, scissors etc.
- Personnel receive safety induction from Laboratory Co-ordinator and a safety laboratory manual
- Surgical scalpels are held only by the handle and stored in a safe place
- Pliers are used to remove corroded scalpel blades or tight fitting hypodermic needles from a holder or syringe. (Eye protection shall be worn when doing this as scalpel blades are very brittle and easily fragment under force)
Surgical scalpels are held only by the handle and kept in a safe place.

Scalpel blades are held in forceps/pliers when being inserted into the handle or removed from it. New blades are pushed or pulled away from the body, not towards it.

New needles and sharps are handled with the protective covering in place. Caps are not replaced on used needles. Users dispose of needles directly to the sharps container.

Syringes and syringes without a needle attached must all go into a sharps container. Razor blades, lancets, scalpels, broken contaminated glassware and any other contaminated items that could cut or pierce the skin must also be placed in a sharps container.

Sharps containers for disposal of these items should be conveniently located and easily accessible in all work places in which sharps are used.

Needle caps are left in place until use.

Scissors are used instead of blades where possible when cutting.

Hands are not used to retrieve needles from vessels, instead the container is emptied onto a flat surface, and forceps are used to transfer needles.

Sharpness of a blade is never tested with a finger. Knives are held by the handle away from the edge of the bench and attempts to catch a falling blade are not permitted.

A designated storage area for all sharp instruments is available.

Suitable storage is available or safety pins.

Blades are wrapped/sheathed and stored appropriately.

Designated puncture-resistant sharps containers are used for the disposal of all needles, blades and other sharps.

Sharps are never disposed of with regular waste or in regular rubbish bags.

Needles and syringes are rendered unusable by destroying them with pliers, and placing them into the sharps container.

Sharps containers comply with the latest BS EN Specification for Sharps Containers.

Sufficient sharps containers are available in relevant areas/laboratories.

Sharps containers are sealed when three-quarters full and disposal is arranged by the Buildings maintenance management.

Broken glassware and sharps that may be contaminated with infectious materials should be cleaned up using mechanical means, such as brush and dust pan, tongs, or forceps. Broken glass should not be picked up by hand.

Contaminated needles must not be bent, recapped, or removed unless there is no feasible alternative.

**NOTE:** Sealed, robust sharp boxes, duly marked may be disposed of in the central skip.

**Risk:** H/M/L:

**With current controls:** L

**With actions applied:** L

**Person(s) Responsible:** ESHI Research Institute Personnel

**Target Date/Status:** Ongoing
8. **Hazard: Bunsen Burners**

**Risks**
- Burns from contact with hot Bunsen Burner and/or hot tubing
- Gas leak from gas left on, damage to tubing etc.
- Fire from naked flame
- Back burn

**Control Measures**
- Central gas ‘shut off’ available
- All incidents (burns, defects etc.) are reported to the laboratory co-ordinator (who is trained in first-aid) and an incident report form completed
- Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory
- Students receive safety induction from lecturers and a safety laboratory manual
- Bunsen Burner user wears a laboratory coat, and long hair is tied back etc.
- Prior to using Bunsen Burners the gas tubing is checked for damage and the ends are securely fixed onto the gas tap and the burner inlet. Damaged tubing is removed from use immediately
- Flammable materials in containers on work benches near Bunsen Burners must not exceed 50ml, and must be in covered containers at a distance at least 30cm from a lit Bunsen Burner or gas burner.
- Lit Bunsen Burners are never left unattended. They are turned off before leaving the laboratory or moving to another area of the laboratory
- When the Bunsen Burner is being used to sterilize equipment that has been dipped in alcohol, the excess alcohol must be allowed to run off the equipment prior to inserting it into the flame
- Because as flames may not be visible in strong sunlight, lights can be dimmed or blinds pulled in order to see the flame more readily
- Bunsen Burners are turned off or turned to the pilot (yellow) flame setting when not in use
- Vessels to be heated over gas burners are securely positioned on tripods or similar apparatus
- Heating of liquids is permitted in glass or Pyrex vessels only. The procedure is carried out in the fumehood where vapours/fumes are likely to be released. Flammable liquids are not heated to a temperature greater than their flashpoints
- Heated containers are not handled until they have cooled down
- Bunsen Burners can remain hot for a period of time. As a result, they must be stored safely so that others are aware they are still hot. Bunsen Burners should always be handled by the base and not the neck
- Bunsen Burners must be at a sufficient distance from the gas supply point and line that they do not pose a risk of melting or igniting same

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing
9. **Hazard: Rubber and Plastic Tubing**

**Risks**
- Putting rubber tubing onto glassware
- Sudden release of gas or liquid resulting from defective tubing or incorrect securing of tubing to nipples/taps, which can lead to fire or explosion
- Release of hot liquids or mains water under pressure
- Various personal injuries
- Damage to property and structures
- Fire
- Aerosols

**Control Measures**
- All incidents (burns, defects etc.) are reported to the laboratory co-ordinator who is trained in first-aid and an incident report form completed
- Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory
- Personnel are instructed, trained and supervised in the use of rubber and/or plastic tubing
- All rubber and plastic tubing is checked periodically for cracks or other damage, prior to use. Replacement is made promptly where necessary
- Rubber tubing is not used on permanent installations connected to laboratory services. Clear Neoprene plastic tubing is used instead
- Excessive lengths of tubing which may lose their identity or which may trail and pose tripping hazards or which may trail into hot/corrosive areas are not used/permitted
- Tubing for use with organic solvents is chosen carefully. The suitability of material is checked for each solvent.
- Tubes to filter pumps and cooling circuits are secured by a jubilee clip fitting. The tube carrying the outflow is firmly anchored in the drain and free from danger of ‘kinking’
- Personnel receive safety induction from laboratory co-ordinator
- Fire blanket available in lab
- Running water and first-aid kit available for burns
- Appropriate PPE used/worn: lab coat, safety glasses, gloves
- Lab safety rules communicated and strictly adhered to
- Signage in place re unauthorised access to lab
- Emergency plans in place

**Risk: H/M/L:**
- With current controls: L
- With actions applied: L

**Person(s) Responsible:** ESHI Research Institute Personnel

**Target Date/Status:** Ongoing
10. **Hazard: Laboratory Refrigerators, Freezers & Fridge-Freezers and cryogenics**

**Risks**
- Reactions between chemicals/substances/materials where they are incompatible and stored together
- Release of vapours/fumes from chemicals/substances/materials
- Contact with materials due to overloading, inadequate labelling, incorrect storage/sealing of chemicals/substances/materials
- Minor skin burning (-80 fridge) (I think we should add this as well)
- Liquid nitrogen splashing

**Control Measures**
- Samples are labelled and sealed in fridge
- Refrigerators, freezers and fridge-freezers are all ‘Lee’ or Ex-rated laboratory refrigerators, which are spark-free, lockable, have a temperature display, an alarm and automatic defrost
- Chemicals/substances/materials are stored correctly and refrigerators, freezers and fridge-freezers are not overloaded
- Chemicals/substances/materials stored are adequately labelled with labels stating the name, date of preparation/acquisition and person responsible with a water-resistant marker/pen
- Food and drink is not permitted in laboratory refrigerators, freezers and fridge-freezers, and signage is displayed on the outside of the units to this effect
- Defects and reported to the laboratory co-ordinator
- When power is due to be turned off, the DIT Estates Office sends a communication and back-up generators are used to power laboratory refrigerators, freezers and fridge-freezers
- Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory
- Gloves for working in the -80
- Wearing gloves and glasses when using cryogenic unit

**Risk: H/M/L:**
- With current controls: L
- With actions applied: L

**Person(s) Responsible:** ESHI Research Institute Personnel

**Target Date/Status:** Ongoing

11. **Hazard: Spillages**

**Risks**
- Contact with materials
- Slips, trips and falls, and increased risk of exposure as a result
- Environmental damage

**Control Measures**
Safety Statement, ESHI Research Institute

- Spill kits available on site
- Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory

**Spillages procedure and spill kits**
- Spill procedure as per skill kit documentation
- Appropriate spill kit(s) in place

**Contents of a Biohazard Spill Kit:**
1. PPE: Safety glasses, a disposable white coat, apron, if required, appropriate gloves, safety glasses, shoe coverings, face mask for aerosols
2. A roll of paper towel
3. Fresh 10% bleach solution or other appropriate disinfectant
4. Spray bottle with disinfectant
5. Yellow biohazard bags or autoclave bags
6. Sharps container
7. Lidded container
8. Sign restricting access: time and date should be included
9. Incident report form (in foyer)
10. Absorbent pads

**NOTE:** Bleach/sodium hypochlorite loses its effectiveness upon storage, even in concentrated forms and is inactivated in the presence of organic materials. Bleach is also toxic; it denatures rubber and plastic materials, corrodes metal and bleaches fabrics. Materials containing bleach cannot be autoclaved.

**Risk:** H/M/L:
- With current controls: L
- With actions applied: L
- **Person(s) Responsible:** ESHI Research Institute Personnel

**12. Hazard: Microscopes**

**Risks**
- Eye infection, eye strain from use
- Cuts from broken slides
- Infection, allergies from multiple users/shared use
- Manual handling injuries as a result of moving microscopes
- Musculoskeletal disorders from prolonged use with poor posture

**Control Measures**
- Glasses, contact lenses worn where necessary, slide imagine can be magnified as much as required. Eye pieces can be adjusted separately. When viewing slides at high magnification, students are instructed to start with the lens close to the slide and focus by moving the slide away from it
- Adequate lighting provided in the laboratory
- Spillages are cleaned up immediately
- Surfaces are wiped down regularly
- Good posture adopted and stool etc. adjusted to achieve a comfortable seating position. Elbows and wrists placed close to microscope
- Regular breaks taken and adequate time is given to students so no rushing is required
All incidents (cuts, defects etc.) are reported to the laboratory co-ordinator (who is trained in first-aid) and an incident report form completed

Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory

Personnel are instructed and supervised in the use of microscopes

Personnel receive safety induction from laboratory co-ordinator

Personnel are adequately trained and are competent in the use of microscopes

Hand-washing facilities available in the laboratory

Sterile wipes are available for cleaning the eyepiece of the microscope

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

13. Hazard: Water Baths

Risks

- Burns and scalding from hot water and steam

Control Measures

- Baths are not left unattended and users must stand an no sit in the vicinity of same
- Water in baths is heated slowly to the desired temperature
- Baths are visually inspected prior to use. Damaged water baths are taken out of use immediately
- Spillages are cleaned up immediately
- Baths are allowed to cool before emptying
- All incidents (cuts, defects etc.) are reported to the laboratory co-ordinator (who is trained in first-aid) and an incident report form completed
- Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory
- Personnel are instructed and supervised in the use of water baths, and do not interfere with or lean over baths
- Materials added to the bath are removed using tongs
- Racks within the bath are not lifted/removed from the bath
- Baths are not overloaded

- Personnel receive safety induction from laboratory co-ordinator Staff are adequately trained and are competent in the use of water baths
- Hand-washing facilities available in the laboratory

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing
14. **Hazard: Glassware**

**Risks**
- Cuts, from damaged or broken glassware e.g. from forcing tubing, teats or bungs into glass tubing, pipettes or condensers which break
- Cuts for flying or ejected pieces of glassware
- Exposure to hazardous substances on contact with containers / receptacles
- Burns from contact with heated glassware

**Control Measures**
- Spillages are cleaned up immediately
- All incidents (cuts, burns, defects etc.) are reported to the laboratory co-ordinator (who is trained in first-aid) and an incident report form completed
- Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory
- Personnel are instructed and supervised in the use of glassware
- Personnel receive safety induction from laboratory co-ordinator Staff are adequately trained and are competent in the use of glassware
- Care is taken in the storage and washing of glassware and specific glassware racks are available in the wash-up area in laboratories
- Hand-washing facilities available in the laboratory
- Use plastic as an alternative to glassware whenever possible
- Glassware is visually inspected before use, glassware wit cracks, breakages, scratches, chipped etc. is reported to the laboratory technician or lecturer immediately and the glassware is not used
- Glassware is not stored near the edge of work benches in the laboratory
- Great care is taken when using/handling glassware including:
  - Inserting pipettes into pipetting aids or Pasteur pipettes into teats
  - Attaching glass to or removing glass from rubber or plastic tubing
  - Removing "frozen" stoppers from glass bottles
  - Breaking glass tubing
  - Washing up glassware
  - Handling broken glassware
    - When handling glassware force or excessive pressure should not be applied
    - When inserting pipettes into pipetting aids or Pasteur pipettes into teats; attaching glass to rubber or plastic tubing; or removing "frozen" stoppers from glass bottles, glassware should be held in a cloth to help prevent slipping and hands kept as close together as possible
    - When fitting glassware to tubing, water or glycerol may be used and the plastic tubing softened by brief immersion in hot water
    - Glass vessels under vacuum should be enclosed in plastic or wire mesh to prevent fragments being scattered if implosion occurs
    - Hot glassware is treated with care and put in a place of safety so that no individual can access it until it has cooled
Ground glass connections are lubricated before assembling and disassembled immediately after use.

- Flasks or containers are never stoppered when hot.
- Where a glass stopper seizes, the container is never heated.
- Running is not allowed while carrying glassware.
- Broken glassware is carried in suitable cages/trays and placed in the sharps container and never the general waste bin.

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

15. **Hazard: Hot Plates & Heat Stirrers**

**Risks**
- Burns as a result of contact with hot surfaces
- Eye or skin damage as a result of splashing liquid
- Fire as a result of heating materials to high temperatures

**Control Measures**
- Spillages are cleaned up immediately.
- All incidents (burns, defects etc.) are reported to the laboratory co-ordinator (who is trained in first-aid) and an incident report form completed.
- Trained first-aiders, a first-aid kit and an eyewash station are available in the laboratory.
- Personnel are instructed and supervised in the use of hot plates and heat stirrers.
- Personnel receive safety induction from laboratory co-ordinator.
- Personnel are adequately trained and are competent in the use of hot plates and heat stirrers.
- Hand-washing facilities available in the laboratory.
- Hot plates and heat stirrers are visually inspected before each use and damaged units reported to management and taken out of use immediately.
- PPE worn includes laboratory coat and safety glasses.
- Liquids are heated or stirred in glass or Pyrex vessels only.
- Stirrers are turned on only after the container to be heated has been placed onto the plate.
- Temperature and rotation speed should be increased gradually to prevent over-heating or splashing.
- Flammable liquids must not be heated to a temperature greater than their flashpoints.
- If the heating of liquids is likely to release hazardous vapours then the process must be carried out in a fume hood.
- Hot plates and heater stirrers are not left unattended when in use.
- Ensure that the electrical cable to the unit is not touching the hot plate during use.
- Units must be switched off when not in use.
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- Hot plates must be serviced and maintained in accordance with the manufacturer’s instructions
- Hot plates are not handled until they have cooled down. They can remain hot for a period of time. As a result, they must be stored safely so that others are aware they are still hot

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

16. **Hazard: Ultra Violet Light Sources (UV light box: high intensity)**

**Risks**
- Burns to skin
- Eye damage: burns to cornea resulting in temporary blindness

**Control Measures**
- Spillages inside the box are cleaned up immediately

**Control**
- Project risk assessments completed
- A UV face shield is worn when using the light box
- Long sleeves and gloves are worn.
- Risk is reduced because exposure times are low/short

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

17. **Hazard: Autoclaves**

**Risks**
- Burns or scalding as a result of careless handling of contents e.g. boiling liquids and hot materials, or contact with steam
- Cuts, lacerations etc. as a result of broken vessels on loading, opening of autoclave or unloading
- Contact with materials due to space constraints if backlog/incorrect storage occurs in storage area before autoclaving
- Exposure to vapours or fumes as a result of chemicals in the vessels in the autoclave
- Slips, trips and falls, and increased risk of exposure as a result of items stored incorrectly/insecurely on the floor before autoclaving
- Slips, trips and falls, and burns as a result of spillage of materials
• Various accidents during pressure testing or explosion where the door is not adequately secured
• Blockage of drains as a result of debris left in the autoclave

Control Measures
• SOP in place
• Materials are correctly stored and accumulation is not allowed to occur in the area designated for storage of materials before autoclaving
• Materials are stored on designated shelves, racks, trolleys and other suitable surfaces, and not on the floor
• Good housekeeping is maintained in the autoclave area
• An efficient schedule is in place for the autoclave to ensure no accumulation or backlog of materials to be autoclaved
• Personnel using the autoclave are trained and are competent in the operation of the autoclave
• A visual inspection is carried out before the autoclave is used. Defects are reported to management immediately and the autoclave is not allowed to be used until inspected by a competent person
• Autoclaves are serviced as required
• Instructions for use are displayed clearly on/adjacent to the autoclave
• If the autoclave is non self-filling staff check the water level before use and ensure it is topped up to the correct level
• Appropriate PPE i.e. lab coat, safety glasses and gloves are worn when loading the autoclave
• After autoclaving and before opening the door of the autoclave, ensure the unit pressure gauge is at zero and don their PPE such as heatproof gloves. This PPE is worn during unloading, as the contents can remain hot for a period of time. Materials are removed with care from the autoclave
• Trolleys, racks etc., are not overloaded with the contents of the autoclave
• Personnel are trained in manual handling and apply their training
• Spillages are cleaned up immediately using appropriate cleaning materials and PPE
• An interlock is present preventing the opening of the autoclave during operation
• Signage regarding the ‘hot surface’ of the autoclave is posted adjacent to the autoclave
• Bottles with screw caps are loosened before autoclaving, and care is taken with bottles after autoclaving as the contents may flow out
• Sharps are protected before autoclaving with adequate coverings
• Glassware is checked prior to placement in the autoclave to ensure there are no breakages/cracks. Broken/cracked glassware is not placed in the autoclave unless necessary and adequately protected

• All autoclave shall have the following fittings:
  o A suitable safety valve with a discharge system that is visible and/or audible and located where it will not cause harm
  o A suitable reducing valve to prevent the safe working pressure from being exceeded
  o A suitable isolating or stop valve on the inlet line in addition to any door interlocked safety valve
  o A well located suitable pressure indicating gauge
  o Suitable drain system where sediment or liquid is likely to accumulate

• Autoclaves are clearly and permanently marked with an identification number and maximum permissible working pressure. In addition, where the process liquid is a fluid at elevated
temperature, it shall be marked with the maximum operation temperature, clearly shown on the temperature gauge

- Autoclaves are operated in accordance with manufacturer’s instructions. Doors must be interlocked with a time delay device to ensure they cannot be opened until all residual energy has been dissipated
- The water level is maintained above the level of heating elements
- For front-loading autoclaves, staff stand in a position so that the door shields their body from the autoclave
- Where autoclaves are used for sterilising liquids in sealed glass containers a safety system must be in place to prevent the door from being opened until the temperature in all the containers have fallen to below 80°C. This could consist of sensing probes or a time-activated door interlock
- Hazardous materials like phenolic disinfectants or cellulose nitrate must not be autoclaved
- Personnel are trained in manual handling and apply their training e.g. team lifting when moving the autoclave
- Trained first-aiders and a first-aid kit are available in the laboratory
- Autoclaves are turned off when not in use and are never overloaded
- Autoclaves comply with relevant CE; EN or BS standards
- Autoclaves are inspected, serviced and maintained in accordance with the manufacturer’s instructions by the laboratory co-ordinator in conjunction with the DIT Estates Office

**Risk: H/M/L:**
- With current controls: L
- With actions applied: L
- **Person(s) Responsible:** ESHI Research Institute Personnel
- **Target Date/Status:** Ongoing

**18. Hazard: Chemical Laboratory Areas**

**Risks**

- Risk of fire from flammable liquids
- Irritation and toxic response from individuals exposed to chemicals
- Injury due to incorrect use of instrumentation
- Cuts and lacerations due to contact with sharps
- Slips, trips and falls, and burns as a result of spillage of materials

**Control Measures**

- Under no circumstances are contact lenses to be worn in the laboratory
- Materials are correctly stored and accumulation is not allowed to occur in the area designated for storage
- Materials are stored on designated shelves, racks, trolleys and other suitable surfaces, and not on the floor
- Good housekeeping is maintained in the laboratory area
- Appropriate PPE is to be worn in the laboratory
• Buddy system is mandatory for laboratory work. Lone working is not permitted

**In Case of Emergency**

In the case of a *minor* incidence:

• Alert emergency services (dial 0 112)
• Neutralise the cause of the incidence
• Take local action immediately for minor personal injuries
• Fill out an incident report form

• In the case of a *serious* incidence:
• Alert emergency services (dial 0 112)
• Neutralise the cause of the incidence
• Move injured parties if possible to safety and evacuate area

**Arrangements for evacuation**

• A continuous alarm will sound
• All staff present act as wardens
• Secure area by turning off appliances and closing doors and windows, if possible.
• DO NOT TURN OFF LIGHTS
• Leave are without delay
• Proceed to nearest clear exit
• DO NOT USE LIFTS
• Assemble at the designated assembly point A (Back gate of Kevin St site)
• DO NOT RE-ENTER UNTIL instructed

**Arrangements for first-aid**

• All users of ESHI MUST complete the one day first aid training course
• First Aid and Eye Wash stations are available in all labs
• Decontamination Showers are available in labs.
• A list of qualified basic first aiders (and extension numbers) is posted in the main laboratory.

• If in any doubt or in the case of a *serious* incidence alert emergency services (dial 0 112)

**Risk: H/M/L:**

With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

**19. Hazard: Biological Laboratory Areas**

**Risks**

• Risk of fire from flammable liquids
• Irritation and toxic response from individuals exposed to chemicals
• Injury due to incorrect use of instrumentation
Cuts and lacerations due to contact with sharps
Slips, trips and falls, and burns as a result of spillage of materials
Electric shock for instrument
Infection due to handling of biological hazardous material

Control Measures
- Under no circumstances are contact lenses to be worn in the laboratory
- Training on the instrument is required prior to use
- Good housekeeping is maintained in the laboratory area
- Appropriate PPE is to be worn in the laboratory
- Buddy system is mandatory for laboratory work. Lone working is not permitted

In Case of Emergency
- In the case of a minor incidence:
  - Alert emergency services (dial 0 112)
  - Neutralise the cause of the incidence
  - Take local action immediately for minor personal injuries
  - Fill out an incident report form

- In the case of a serious incidence:
  - Alert emergency services (dial 0 112)
  - Neutralise the cause of the incidence
  - Move injured parties if possible to safety and evacuate area

Arrangements for evacuation
- A continuous alarm will sound
- All staff present act as wardens
- Secure area by turning off appliances and closing doors and windows, if possible.
- DO NOT TURN OFF LIGHTS
- Leave area without delay
- Proceed to nearest clear exit
- DO NOT USE LIFTS
- Assemble at the designated assembly point A (Back gate of Kevin St site)
- DO NOT RE-ENTER UNTIL instructed

Arrangements for first-aid
- All users of ESHI MUST complete the one day first aid training course
- First Aid and Eye Wash stations are available in all labs
- Decontamination Showers are available in labs.
- A list of qualified basic first aiders (and extension numbers) is posted in the main laboratory.

- If in any doubt or in the case of a serious incidence alert emergency services (dial 0 112)
Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

20. **Hazard: PC Controlled Bench Top Instruments**

**Risks**

- Risk of fire from flammable liquids
- Irritation and toxic response from individuals exposed to chemicals
- Injury due to incorrect use of instrumentation
- Cuts and lacerations due to contact with sharps
- Slips, trips and falls, and burns as a result of spillage of materials
- Asphyxiation for gases
- Infection due to handling of biological hazardous material

**Control Measures**

- Under no circumstances are contact lenses to be worn in the laboratory
- Materials are correctly stored and accumulation is not allowed to occur in the area designated for storage
- Materials are stored on designated shelves, racks, trolleys and other suitable surfaces, and not on the floor
- Good housekeeping is maintained in the laboratory area
- Appropriate PPE is to be worn in the laboratory
- Buddy system is mandatory for laboratory work. Lone working is not permitted
- Ensure the room is well ventilated where gases are in use
- For handling biological samples All samples must be placed in laminar flow hoods when work is being carried out. The hoods should be switched on 15-20 mins prior to use to ensure sufficient airflow & to eliminate aerosols. All liquid waste will be disposed of safely by using disinfectants. Virkon is the most important disinfectant used in the NanoLab laboratory as it is proven effective against HIV/AIDS and Hepatitis B & all other viruses. A 1% solution is used for effective use. Liquid waste can be disposed of in the cell culture laboratory sink. All plastic waste & gloves will be disposed of in the yellow biohazard bins. Before leaving the laboratory hands must be thoroughly washed with anti-bacterial soap.
- All personnel must be trained on instrumentation prior to use
- Use of sharps will be restricted as far as possible. Any sharps used will be disposed of in the yellow “sharpak” bins provided in the laboratory, which are located under each laminar flow cabinet.

**In Case of Emergency**

In the case of a minor incidence:

- Alert emergency services (dial 0 112)
- Neutralise the cause of the incidence
- Take local action immediately for minor personal injuries
• Fill out an incident report form

• In the case of a serious incidence:
  • Alert emergency services (dial 0 112)
  • Neutralise the cause of the incidence
  • Move injured parties if possible to safety and evacuate area

Arrangements for evacuation
• A continuous alarm will sound
• All staff present act as wardens
• Secure area by turning off appliances and closing doors and windows, if possible.
• DO NOT TURN OFF LIGHTS
• Leave area without delay
• Proceed to nearest clear exit
• DO NOT USE LIFTS

• Assemble at the designated assembly point A (Back gate of Kevin St site)
• DO NOT RE-ENTER UNTIL instructed

Arrangements for first-aid
• All users of ESHI MUST complete the one day first aid training course
• First Aid and Eye Wash stations are available in all labs
• Decontamination Showers are available in labs.
• A list of qualified basic first aiders (and extension numbers) is posted in the main laboratory.

• If in any doubt or in the case of a serious incidence alert emergency services (dial 0 112)

Risk: H/M/L:
With current controls: L
With actions applied: L
Person(s) Responsible: ESHI Research Institute Personnel
Target Date/Status: Ongoing

21. RISK ASSESSMENT FOR LONE/OUT OF HOURS WORK

1.0 Introduction
This form should be completed by a competent Assessor/Supervisor for any procedure/system of work to be carried out “out of hours” by any staff member, postgraduate, contractor or visitor. This form should be completed fully and copied to the Health and Safety Officer and to the local Building Maintenance Manager.

2.0 Guidelines for Completion of Risk Assessment
The following information is intended a guide only.
**Hazard Identification & Risk Assessment**

Identify known or expected hazards associated with each work activity. Note also the particular hazards due to lone/out of hours working. Evaluate the risks, describe all existing control measures and identify any further measures required.

*Some hazards to consider may include (this list is not exhaustive):*

- **Workplace**: Identify hazards specific to the workplace / environment, which may create particular risks for lone workers, e.g. remote areas, laboratories, workshops, confined spaces. Consider access/egress requirements, parking arrangements, etc.
- **Work Process**: Identify hazards specific to the work process, which may create particular risks for lone workers, e.g. work on electrical systems, use of chemicals, biological agents, gases, scientific experiments, work in laboratories/workshops etc.
- **Work Equipment**: Identify hazards specific to the work equipment, which may create particular risks for lone workers, e.g. manual handling, operation of emergency controls, use of machinery and tools.
- **Incidents/Illness**: Identify emergency situations that may arise out of hours, including inadequate provision of first-aid arrangements.
- **Violence**: Identify the potential risk of violence. Is there a history of violence or threats to staff? Is the location likely to increase the risk of violence? Is there a risk of violence from members of the public and/or intruders? What security systems are in place?
- **Individual Factors**: Identify hazards specific to the individual, which may create particular risks for lone workers e.g. medical conditions, disabilities, expectant mothers, age, inexperienced workers etc.
- **Work Pattern**: Consider the lone worker's work pattern and how it relates to those of other workers, in terms of both time and geography.
- **Welfare**: Provision of welfare facilities e.g. water, sanitary facilities, heating etc.
- **Other**: Specify any additional hazards particular to lone/out of hours work.

**Persons at Risk**

Identify all those who may be at risk. It is important that these individuals are made aware of the outcome of the risk assessment and informed of all necessary control measures.

Ensure that vulnerable groups are accounted for:

- Pregnant employees
- Those with medical conditions
- Those with disabilities
- Young, old and inexperienced workers

**Control Measures to Reduce the Risk**

Identify existing control methods, assess their effectiveness and specify any additional controls that may be necessary. Consider alternative work methods, training, supervision, protective equipment/devices etc.
For every hazard, controls should be put in place to minimise the risk. Use the risk assessment to:

1. Identify the existing control measures
2. Assess their effectiveness
3. Identify and specify any additional controls that may be necessary

Some control measures to consider may include (this list is not exhaustive):

- Site-specific information, instruction and training
  - Emergency procedures.
  - Procedures for lone/out-of-hours working.
- Increased communication systems / procedures (e.g. regular pre-arranged contact by e.g. mobile phone, telephone, radio).
- Increased supervision.
- Increased security (e.g. CCTV, secure access, personal alarms).
- Increased lighting at entrances, exits, car parks etc.
- Controlled periodic checks.
- Buddy system.
- Automatic warning devices, e.g. panic alarms, no movement alarms, automatic distress message systems, i.e. pre recorded message sent if not actively cancelled by operative etc.
- Use of Personal Protective Equipment and clothing (PPE).
- First aid kits and training.
- Implementation of Standard Operating Procedures (SOP’s).
- Locking and securing place of work.
- End of task and returning of keys.
- Implementation of correct incident reporting procedures.

Lone workers should be given information and training in normal everyday situations in addition to knowing when and where to seek guidance and assistance from others e.g. in an unusual or threatening situation.

Training
Identify the level and extent of training required, taking into account the nature of the lone working activity. Consider the knowledge and experience of individuals, particularly young and new workers. Lone workers should be given information to deal with normal everyday situations but should also understand when and where to seek guidance or assistance from others i.e. unusual or threatening situations etc.

Provisions for Emergencies

- Lone workers should be capable of responding correctly to emergencies.
- Emergency procedures should be established and employees trained in them.
- Information about emergency procedures and danger areas should be given to lone workers.
- Lone workers should have access to adequate first-aid facilities.
Supervision
The extent of supervision required will depend upon the level of risks involved and the ability and experience of the lone worker. A few examples of supervisory measures which may be useful in some circumstances include:
- Periodic telephone contact with lone workers
- Periodic site visits to lone workers
- Regular contact (telephone, radio etc.)
- Automatic warning devices, e.g., motion sensors, “man down” alarms etc.
- Manual warning devices e.g. panic alarms etc.
- End of task / shift contact (i.e. returning keys)

Additional Information
Identify any additional information relevant to the lone worker, including emergency procedures, out-of-hours contact details, first aid provisions, etc.

Communication of Risk Assessment
It is vital that the results of the risk assessment are communicated to the lone/out of hour’s worker and the control measures are discussed and understood clearly.

Recording Assessment Details
It is important to retain records of risk assessments for inspection. All signatures of parties involved shall be obtained.

3.0 Details of Lone/Out of Hours Working

<table>
<thead>
<tr>
<th>Name of Lone/Out of Hours Worker</th>
<th>Authorised Residents of the Environmental Sustainability and Health Institute of DIT at Greenway Hub. Please see attached Excel File outlining all occupants with current Health and Safety Training record.</th>
</tr>
</thead>
<tbody>
<tr>
<td>School/Function</td>
<td>Environmental Sustainability and Health Institute</td>
</tr>
<tr>
<td>Academic Leader of School/Function</td>
<td>Jesus Frias/Academic Leader</td>
</tr>
</tbody>
</table>
## Brief Description of Work:

Desk based research, administration activities, meetings, computer work.

**Outline why lone/out of hours work is absolutely necessary:**

The establishment of out of hours access to Greenway residents is dependent on their activity.

- Residents involved in National and International projects carry out work which is not a Monday to Friday 8 am – 10 pm activity, to meet collaborator/client/project deadlines, preparations of reports and presentations.
- Residents are collaborating internationally and need access to their offices for conference/ Skype calls with international collaborator/project partners in different time zones.
- To accommodate research staff who need access to their office for work related activities outside normal working hours.
- Out of hours access is standard practice in third level research institutes.

In order to attract and retain research which are able to obtain further extramural funding for DIT 24/7 access is one of the tools that will facilitate this.
Outline what alternatives to lone/out of hours working have been considered and exhausted:

While some remote access is feasible, researchers require access to facilities and documentation to deliver services to their client base. Therefore, to be successful researchers need 24/7 access to their desks, computers and files as is the norm across the Research and Development area.

Outline details of funding available from Faculty/Function to support costs associated with lone/out of hours working:

4.0 Risk Assessment

The following risk categories apply to lone/out of hours working. Please tick accordingly.

<table>
<thead>
<tr>
<th>Category A (Risk (unacceptable))</th>
<th>Activities to be carried out 8am – 6pm Mon– Fri only</th>
<th>Insert Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category B (Risk (High))</td>
<td>Activities to be carried out only by experienced researchers with a competent “buddy”* in attendance</td>
<td></td>
</tr>
<tr>
<td>Category C (Risk (Medium))</td>
<td>Activities to be carried out by sufficiently competent researchers (may or may not require a buddy*)</td>
<td></td>
</tr>
<tr>
<td>Category D (Risk (Low))</td>
<td>Activities to be carried out by any postgraduate/staff member (e.g. computer work/ desk based work)</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Buddy means a second competent person is present. Buddies should be nominated by the Academic Leader of ESHI as part of the risk assessment.

<table>
<thead>
<tr>
<th>Hazard(s)</th>
<th>Control Measures to Reduce Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access &amp; Egress</td>
<td></td>
</tr>
</tbody>
</table>
1. Follow procedure for entering and exiting building, e.g. access, lights.
   - ‘Standard Operating Procedure for Greenway Hub out of Hours Access, Stay & Egress’ is in place supplied by ESHI and approved by Health & Safety and Estates.

2. Procedure communicated to all relevant personnel (during out of hours induction training) and displayed internally at Greenway Reception.

3. Out of hours working induction training.
   4. CCTV in place.
   5. Buddy system in place

<table>
<thead>
<tr>
<th>Hazard(s)</th>
<th>Control Measures to Reduce Risk</th>
</tr>
</thead>
</table>
2. Persons under 18 are not authorised in the building out of hours  
3. SOP and Out of Hours Induction Training in place  
4. Observe emergency number list.  
5. If the alarm is sounding, do not enter the building. If occupant is in the building and the alarm sounds they should exit the building immediately.  
6. Advise caution when going up or down stairs to avoid trips or falls.  
7. Maintain good housekeeping.  
8. All areas to be kept clean and tidy at all times.  
9. All corridors, stairs, entrances and exits must be kept dry and free from obstructions at all times.  
10. Adequate lighting must be supplied at to ensure that visibility is sufficient at all times.  
11. Disposal and appropriate segregation of waste in accordance with DIT’s policies.  
12. Appropriate storage of all items so as not to pose risk to health and safety.  
13. Good cable management in order to eliminate risks associated with trailing cables.  
14. Observe manufacturer’s instructions.  
15. No access to roof. |
| 1. Office, stairs                            |                                                                                                 |
| 2. Slips, trips and falls                    |                                                                                                 |
| 3. Poor housekeeping                         |                                                                                                 |
| 4. Roof access                               |                                                                                                 |
| 5. Office based work                         |                                                                                                 |
| 6. Computer and electrical                   |                                                                                                 |

<table>
<thead>
<tr>
<th>Individual Factors/ Incidents/ Emergencies</th>
<th></th>
</tr>
</thead>
</table>
### Safety Statement, ESHI Research Institute

**1. Pregnancy, medical conditions, disabilities, sudden illness.**

**2. Medical emergency/first aid incident.**

**First aid kit available in tea room on ground floor, and communal area on 1st and 2nd floors.**

**2. AED on ground floor.**

**3. Emergency number list.**

**4. Medical emergencies – follow procedure**

**5. Buddy system in place.**

**6. Advise Greenway Residents that it is their responsibility to notify supervisors/line manager with information regarding medical conditions from their staff which may affect the individual’s or other’s health and safety for out-of-hours access thus allowing the company to put a staff plan in place.**

**7. Online ERT completed by all authorised Greenway Residents.**


### Violence/Crime/Personal Safety & Security

**1. Intruder/violence/unknown persons loitering outside building after hours.**

**2. Visitors**

**1. CCTV system in place on campus.**

**2. Buddy system in place.**

**3. If occupants feel unsafe or observe unknown persons loitering immediately contact the control room and alert Gardaí.**

**4. Complete online emergency response training.**

**5. SOP in place for access and egress - System of contacting Security Company on entering, exiting buildings.**

**6. External Lighting.**

**7. All relevant occupants to undergo out of hour’s working induction training (see attached list of relevant staff).**

**8. No non-approved individuals can enter the building after normal opening hours.**
<table>
<thead>
<tr>
<th>Hazard(s)</th>
<th>Control Measures to Reduce Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><em>Other</em> (please specify)</em>*</td>
<td></td>
</tr>
</tbody>
</table>
| 1. Electricity              | 1. All electrical installations, in all premises under the control of DIT, and all electrical works, servicing and testing carried out in these premises will be done so by competent, authorised persons in accordance with the ETCI national rules on electrical installations, current electrical regulations, COP’s, current industrial guidelines and statutory regulations and provisions.  
2. Additional precautions and arrangements are outlined in the DIT parent Safety Statement.  
3. All controls should be observed and any defects reported.  
4. Any service issues should be reported to Estates. |
| 2. Lighting                 | 1. Lighting levels appropriate to the tasks carried out will be provided in all areas under the control of DIT.  
2. Turn off all lighting when exiting rooms & the building.  
3. External lighting will be such so as to provide safe access and egress to buildings and to ensure the safety and security of all persons. |
| 3. Office safety            | 1. Adequate office space is allocated for the working personnel.  
2. Sufficient lighting, ventilation shall be provided.  
3. Principles of good housekeeping to be adhered to.  
4. Spillages to be cleaned up immediately.  
5. All walkways, stairs, fire exits etc. to be kept clear of obstructions.  
6. Correct manual handling techniques to be used when lifting office equipment or supplies (manual handling training is the responsibility of each client company).  
7. Good cable management to prevent trips, slips and falls.  
8. Waste to be disposed of appropriately. |
| 4. Ventilation, temperature and humidity | 1. During normal office hours the building is heated and ventilated by centralised systems and outside normal office hours providing localised heating to specific rooms is not feasible. Therefore out of hours heating will be provided by DIT supplied oil heaters. These should not be used during the day as they interfere with the heating and ventilation system.  
2. DIT will provide heaters to clients for out of hours use only to ensure compliance with health and safety legislation. A designated area will be provided for storage. |
6. Hot liquids and solids

1. Due care to be taken when handling or transporting hot foods, liquids and while dispensing hot drinks.
2. All defects to be reported and rectified immediately.

**Persons at Risk**

Identify and tick all those who may be at risk in all categories.

<table>
<thead>
<tr>
<th>Staff</th>
<th>(Tick)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic staff</td>
<td></td>
</tr>
<tr>
<td>Technical staff</td>
<td></td>
</tr>
<tr>
<td>Maintenance staff</td>
<td></td>
</tr>
<tr>
<td>Administrative staff</td>
<td></td>
</tr>
<tr>
<td>DIT Cleaning staff</td>
<td></td>
</tr>
<tr>
<td>Researcher</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students</th>
<th>(Tick)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate students</td>
<td></td>
</tr>
<tr>
<td>Undergraduate students</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Others</th>
<th>(Tick)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning contractors</td>
<td></td>
</tr>
<tr>
<td>Emergency personnel</td>
<td></td>
</tr>
<tr>
<td>Other contractors</td>
<td></td>
</tr>
<tr>
<td>Visitors*</td>
<td></td>
</tr>
<tr>
<td>Others (please specify) Hothouse client companies occupying office space at Greenway Hub</td>
<td>✓</td>
</tr>
</tbody>
</table>

* No non approved individuals can enter the building after normal opening hours

Note: No persons under the age of 18 shall be permitted in the building after normal opening hours

**Training**

Each approved out of hour’s worker has completed the following mandatory training courses and that the training is in date:

- DIT online Emergency Response Training (ERT). Refresher required every 2 years
- DIT Induction for Out of Hours Work. Refresher as required.

An application for out of hours work cannot be considered unless all mandatory training has been completed and is in date. It should be noted that each client company is responsible for their own staff’s first aid and manual handling training.

**Supervision**

Identify the level of supervision required. Confirm that all necessary supervision is in place and in working order.

<table>
<thead>
<tr>
<th>Type of Supervision</th>
<th>Please tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify all necessary measures</td>
<td>Yes</td>
</tr>
<tr>
<td>Advised to have a competent ‘buddy’/colleague present</td>
<td>✓</td>
</tr>
<tr>
<td>Periodic telephone contact with security company (monitoring service)</td>
<td>✓</td>
</tr>
</tbody>
</table>
Safety Statement, ESHI Research Institute

| Manual warning devices e.g. panic alarms | ✓ |
| End of task / end of shift contact control room | ✓ |

As indicated all out of hours workers will have completed online ERT and Out of Hours Induction. Approved persons will also sign a declaration that they will comply with all relevant DIT policies and procedures and undertake not to access any unauthorised areas.

It is noted that control room staff will not keep a log of individuals entering or exiting the building. A buddy system is in place whereby it will be required that two people be in the building at any one time.

**Personal Protective Equipment & Clothing (PPE)**
Identify what PPE is required: N/A

**Table 1**
Details of Approved Occupants/Direct Supervisor and Academic Leader of Function

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Name: Approved Out of Hours Persons</th>
<th>Contact No.</th>
<th>Training completion dates</th>
<th>Signed Declaration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Online ERT</td>
<td>Induction</td>
</tr>
</tbody>
</table>

The responsibility of staff training in First Aid and Manual Handling Training lies with the client company. Site-Specific Procedures for Out of Hours Working covered in Out of Hours Induction and Emergency Response Training.
5.0 Signatures

<table>
<thead>
<tr>
<th>OUT OF HOURS WORKER</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have read and understood this risk assessment, the DIT Policy &amp; Procedure for Lone/Out of Hours Working and the SOP for Hothouse Greenway Hub Out of Hours Access &amp; Egress. I have completed the Out of Hours Induction and the online Emergency Response Training. I am familiar with all procedures and security and emergency arrangements in place for lone/out of hours working. If given permission for lone/of hours working, I agree to abide by all policies and procedures and control measures in place. I agree not to access any unauthorised area of the building.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name (Print)</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

APPENDIX 2

SOP

1. Fumehoods

Function and Usage
A Fume Hood is essentially a ventilated box with one side providing an adjustable opening. It provides air extraction to remove any fumes produced within the box. It is designed to have laminar flow (even and non-turbulent air-flow) through the front opening. To obtain even flow through the face of the fume cupboards, baffles are generally installed at the back of the cupboard. These baffles are set to extract the air from two or more locations across the back of the fume cupboard. Fume cupboards draw air out of the rooms they are installed in. There needs to be an adequate volume of air available or the fume cupboard will not be able to draw a sufficient volume of air to function properly. Where the room is small or there are a large number of fume cupboards an additional supply of air, other than the normal room ventilation, may be required. This additional air is known as the make-up air. If the make-up air supply is not adequate or the make-up air is switched off then the fume cupboards may not be able to achieve the required face velocity. Alternatively if there is no make-up air and the room ventilation is switched off, there may be insufficient air volumes for the fume cupboards to achieve the required face velocity. This can cause fumes to escape in to the laboratory. The base of the fume cupboard area must be kept clear to allow effective ventilation of the work area.

Maintenance
Regularly maintain the fume cupboard by:

- Removing the contents of the cupboard and washing the walls and work bench.
Keeping sinks and drains clear of refuse and checking them regularly.
Labelling all containers in the fume hood appropriately.
Ensuring waste bottles in the fume hood are capped when not in use and are disposed of regularly. Maintenance of fans must be carried out regularly (annually recommended).

Safe Work Procedure

• Perform all work that involves hazardous and noxious materials in the hood. If a fume hood is not set up and used appropriately, fumes may escape out of the sash opening of the hood towards the user, especially with heavier vapours such as formaldehyde or chlorinated solvents.
• Do not work within 10cm of the leading edge. The larger the item, the further back it needs to be within the fume cupboard to overcome the turbulence created.
• Work extending arms under or around the sash, placing the academic Leader behind the sash, with the glass between the worker and the chemical source. The sash will act as a primary barrier in the event of spill, splash or explosion. Academic Leaders must always be kept out of fume hood while working.
• Put the minimum amount of materials in the hood required for the current operation. Each additional item in the hood creates additional turbulence and potential for gas/vapour escape. Do not place storage items behind the area you are working in.
• Do not put large equipment in the fume cupboard, as they block the baffles and produce regions of zero or low flow in the work space.
• Do not open windows which may create draughts in the vicinity of the fume cupboard. The make-up air supply and room ventilation should be on whenever the fume cupboard is in use.
• Do not use perchloric acid in a standard hood. Use a water-washed hood.
• Do not use infectious materials in a chemical fume hood.
• Before using a fume cupboard for the first time:
  • Check that the flow reading on the test certificate meets or exceeds the flow rate requirement.
  • Locate where the fan failure warning alarm is and what it will sound like (if fitted).
  • Locate the fire damper or emergency stop (if fitted) for use in the event of a fire.
  • Locate the nearest phone, fire extinguisher/blanket, shower or eyewash station and know who and where the qualified first aid providers are.
• Wear protective clothing (laboratory coats and gloves).
• Hazards associated with the use of a fume hood
  • While fume hoods are designed to protect the user from hazards, misuse can cause them to afford less protection than expected and, hence, becoming a hazard in their own right.
  • The effectiveness of a fume hood is reduced if the sash is open too wide or the hood is cluttered with apparatus.
  • Fume hood fans are susceptible to failure leaving them effectively useless.
  • The front sash may be made of heavy glass. Accidents have occurred when the sashcord breaks.

Risk associated with the use of a fumehood

Fume hood sash left open and blockage of airflow which allows the escape of the fumes from toxic and noxious material. The probability of injury is slight to moderate and may increase with the toxicity of the escaping material.

From the apparatus itself, i.e. fan not functioning or broken sash. The probability is slight but damage could range from moderate to severe.

Applicable Standards and Regulations

http://www.bsigroup.com/en/Shop/Publication-Detail/?pid=000000000030159750
http://www.bsigroup.com/en/Shop/Publication-Detail/?pid=000000000000326491
2. Chemical spills

General Spill procedures
In the case of a spill or leak of chemical the following procedures should be carried out.
- The area must be cordoned off and access to area restricted
- Area must be kept well ventilated.
- APPROACH THE SPILL ONLY IF SAFE TO DO SO.
- WEAR PPE: SAFETY GLASSES AND GLOVES (check type in CRA or SDS) before approaching the spill. For larger spills breathing apparatus may be required and is available. You must be trained to use BA when cleaning up a spill.
- If the spilled material is extremely/highly/flammable all sources of ignition must be turned off if safe to do so.
- The CRA must be consulted.
- The SDS for the chemical concerned must be consulted before dealing with the spill
- The source of the leak should be identified and sealed if safe to do so.
- All wastes and all contaminated items generated by spillages must be disposed of in a suitable manner.
- Individual spill procedures are outlined in the laboratory manual and in the CRA.

Spill procedure (up to 250cm³)
In addition to consulting the laboratory procedure and CRA:-

WEAR APPROPRIATE PPE
- Mop up solid waste (up to 5g) with a damp tissue and rinse well with water before putting in the bin.
- Wipe up organic spills with tissue and leave in the fume cupboard to evaporate for at least 1 hr. Inform the technician.
- Acid or base spills must be neutralised and diluted well before collection. Rinse any tissue used well with water before disposal

Spillage procedure (>250cm³)
- Supervisor must be consulted so that they can deal with the situation appropriately.
- Spillage kits are available in the laboratory. All spillage kits must contain the following: Absorbent booms, Absorbent pads, Dry absorbent material, bush and pan, General purpose broad range disposable mask, Heavy duty gloves, Safety glasses waste bag/ Empty container.
- Solid waste must be collected with the minimum of dust generation and disposed of as hazardous waste in consultation with the technician.

Code of practice for clean-up of a chemical spill
Solid chemical spill
Background information
- If any of the following are true, then the situation should be considered highly hazardous.
  - Is the chemical toxic or a CMR toxin?
Safety Statement, ESHI Research Institute

- Is the material a fine powder?
- Is there a danger of adverse chemical reaction?
- If any of the above is true, evacuate the immediate area.
  - Gather relevant information on the chemical from the Safety Data Sheet (SDS), including its:
    - Reactivity
    - Flammability
    - Explosive nature
    - For example peroxide forming chemicals
    - Corrosive nature
    - Oxidising power
    - For example nitrates, permanganates and perchlorates should be disposed of separately to combustible material.
    - Toxicity
      - Gather the appropriate Personal Protective Equipment (PPE) necessary for the clean up. This information is available in the SDS, and may include:
        - A respirator (type P2 as a minimum) if the material is toxic or a fine powder
        - Safety glasses or goggles to prevent eye irritation
        - Gloves to prevent skin absorption or irritation
        - Disposable overalls/lab coat
          - Gather material necessary to aid in the clean up, including:
            - Wet paper towel or similar to cover the spilt material
            - Damp sand or saw dust may be of assistance in cleaning up
            - A shovel or dustpan to collect the material
            - A container for disposal

Clean-up
- Do not tackle a clean-up procedure by yourself. As a minimum there should be two persons involved. e.g. one to clean up the spill and one to observe.
- Cover the spilt powder with the wet paper towels (or similar items), or use damp sand.
- Carefully shovel this mixture into the disposal container. This method should not be used on substances that in contact with water emit flammable gases or become spontaneously flammable.
- Clean yourself and any equipment as close to the site as possible, without spreading the material around.
- Place material in a suitable container and contact a registered disposal company to arrange for safe disposal

Code of practice for clean-up of a liquid nitrogen spill
For minor spillages (<1 litre) of liquid nitrogen the following protocol should be followed:
- Evacuate the immediate area.
- Allow liquid to evaporate, ensuring adequate ventilation
- Following return to room temperature inspect area where spillage has occurred
- If there is any damage to the floors, benches or walls inform the Estates Office
- If any laboratory equipment has been damaged following the spillage inform the laboratory co-ordinator /supervisor

For major spillages (>1 litre) of liquid nitrogen the following protocol should be
Safety Statement, ESHI Research Institute

followed:
- Evacuate the immediate area
- Inform emergency services on internal telephone 999/112
- If present ensure that the oxygen depletion sensor has been reset before re-entering the room.
- In the event that an oxygen depletion sensor is not present do not return
to the area until it has been declared safe

Standard Operating Procedure for the Neutralization of Strong Acids and Bases
Although technically not waste minimization, neutralization of strong acids and bases can reduce the size of your laboratory’s and KSU’s aqueous waste stream. Neutralization is the most efficient and least costly way of managing waste acids and bases. This bulletin addresses the neutralization of the acids and bases listed below. After neutralization, waste liquids can be disposed of in the sanitary sewer.

Solutions that should not be neutralized:
The solution you plan to neutralize should not contain heavy metals such as arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver. Wastes containing high levels of other metals may be of concern, as well. Acids that are very reactive with water should not be neutralized, unless you have expertise in handling and using them. These include: acid anhydrides and chlorides; chlorosulfonic acid, fuming nitric and sulfuric acids; liquid halides of boron, silicon, tin, titanium and vanadium; and liquid halides and oxyhalides of phosphorus, selenium and sulfur. Due to extreme safety considerations, you should also not attempt to neutralize hydrofluoric acid.

Personal protection and equipment
Carry out neutralizations in a well-ventilated fume hood. Use the sash or a safety shield for protection against vigorous reactions. Wear a chemical resistant apron, splash-proof goggles or a full-face shield and nitrile gloves. Long gloves or gauntlets are also recommended. A five gallon polyethylene bucket is recommended for neutralizing 1-10 litres. A large container is needed in acid neutralization for addition of ice and base, and to safely stir the reaction.

Procedures
Neutralization of strong bases
1. Bases that may be neutralized include: solutions of potassium and sodium hydroxides, alcoholic sodium or potassium hydroxide cleaning solutions, ammonium hydroxide and ammonia solutions.
2. Dilute the base to a 5% (by weight) concentration or less.
3. Slowly add 6 N hydrochloric acid or other acid.
4. Monitor pH changes with pH meter or pH paper. (Note: Liquid indicators can oxidize rapidly in basic solutions and give false colour change).
5. When pH is between 6 and 10, solution can be washed down sanitary sewer with 20 parts water.

Neutralization of strong acids
1. Prepare a 6 N solution of sodium hydroxide (240 g/ L) or potassium hydroxide (336 g/ L).
2. One litre of 6 N base can neutralize:

<table>
<thead>
<tr>
<th>Acid</th>
<th>Quantity mL</th>
</tr>
</thead>
</table>

130
3. Dilute the acid to a 5% (by weight) concentration or less (add acid to water, NOT water to acid). Use ice as necessary to cool the solution. Limit the solution to a maximum of 10 litres. Acids may generate heat upon neutralization.

4. Neutralize with 6 N sodium hydroxide or potassium hydroxide, adding it slowly.

5. Monitor pH with pH paper, a pH meter, or a suitable indicator.

6. When pH is between 6 and 10, wash solution down the sanitary sewer using 20 parts water.

---

### 3. Fire evacuation

#### Emergency Evacuation

**Role of personnel in the event of an emergency**

It is essential that all personnel be fully aware of the evacuation procedures for the area in which they work.

**On suspecting a fire i.e. smelling or seeing smoke**

a. Do not investigate alone

b. Alert ESHI Academic Leader, administration or technical staff, laboratory co-ordinators

**On discovering a fire:**

a. Activate the nearest alarm call point or break glass unit (in stair well), after which

b. Contact the ESHI Academic Leader, administration or technical staff, laboratory co-ordinators desk or emergency services

c. Fight the fire with the appropriate fire extinguisher

d. Only attempt to extinguish a fire if it is safe to do so and if:

i. The fire is small (i.e. not greater than the size of an average waste paper basket)

ii. There is an exit to your back

iii. You have the correct extinguisher and know how to use it

**On hearing an alarm activation or other warning:**

- Evacuate the building* immediately by the nearest available exit “sweep searching” areas as you go

- Shut down equipment (gas/electricity) if safe to do so and time permits

- Close windows and doors to confine smoke/fire if safe to do so and time permits

- Instruct personnel to leave the ESHI Research Institute

- All visitors should be escorted to safety by the person they are visiting

---

<table>
<thead>
<tr>
<th>Acid Name</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid (glacial)</td>
<td>342</td>
</tr>
<tr>
<td>Formic acid (88%)</td>
<td>264</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>504</td>
</tr>
<tr>
<td>Hydrobromic acid (48%)</td>
<td>720</td>
</tr>
<tr>
<td>Hydriodic acid (47%)</td>
<td>1080</td>
</tr>
<tr>
<td>Hydrobromic acid (48%)</td>
<td>720</td>
</tr>
<tr>
<td>Nitric acid (70%)</td>
<td>378</td>
</tr>
<tr>
<td>Perchloric acid (70%)</td>
<td>516</td>
</tr>
<tr>
<td>Phosphoric acid (85%)</td>
<td>414</td>
</tr>
<tr>
<td>Sulfuric acid (96%)</td>
<td>166</td>
</tr>
<tr>
<td>Trichloroacetic acid (20% soln.)</td>
<td>4902</td>
</tr>
</tbody>
</table>
• Anyone in common areas or moving between areas, should immediately join the lines of people exiting
• If required, assist any individuals to evacuate the area
• Form a single file on both sides of the corridor or stairway, leaving the centre passageway clear
• Do not delay or stop to collect personal belongings
• Do not use the lift
• If heavy smoke present, try to find another exit or crouch low to the floor
• All doors should be closed (not locked) by the last person in the line
• Report to your Assembly Points: **Assembly Point B - Courtyard, Grangegorman** 50 meters in front of the Greenway building exit.

* Separate personal emergency egress plans (PEEP) will be prepared for people with disabilities
* All visitors should be escorted to safety by the person they are visiting

4. **SOP: INSTRUMENTS**

**EDDY-JET2 SPIRAL PLATE**

*Front End View*
1. Touchscreen
2. Microsyringe cartridge slot
3. Sample beaker trough
4. Turntable platform
5. Petri plate gripper
6. Microsyringe waste container

Rear View
7. Main Switch
8. Barcode reader connection
9. 2x RS-232 ports
10. 2xUSB ports
11. Mains cable connection
12. Ethernet connection
Starting a Program

To get started programming, the blue microsyringe button in the device’s main menu must be pressed.

A. Sample Repetition

1. The amount of sample repetitions is to be chosen by pressing the up and down arrow buttons.
2. The green checkmark button must be pressed to save the sample repetition number. The general spread settings menu will be then accessed.

B. Choosing a Spiral Mode
Once in the general spread settings menu, the spiral distribution or mode to be used must be selected. There are 34 spread modes, the volumes poured in each of these are specified in Appendixes A I and AIII.

- The drop down list is to be opened in order to display the available distributions.
- The desired distribution must be pressed on in order to select it.

C. Purge Cycles

The up and down arrows shall be pressed to set the amount of purge cycles.

D. Feeding Mode:

Default settings will always include automatic sample feeding.
If manual sample feeding is to be activated, the beaker button must be pressed, a test tube will take its place signalling manual feeding has been activated.

**E. Identification Mode:**

Inoculated plates and samples are numbered increasingly by default. Whenever operators need to control plate and sample ID numbers, controlled identification needs to be activated. When controlled plate ID is activated, identification numbers are inserted according to inputs from a barcode reader (CAT 90005701) or a keyboard (see the “External Connections” section for more information on how to connect these).

The ID label button must be pressed to activate controlled identification. Once it’s pressed, it will colour up indicating controlled plate identification has been activated.

**Saving a Single Spread**
If only a single spread is to be performed for each sample, all settings must be saved right away by pressing the checkmark button. If the checkmark button isn't pressed selected settings won't be activated.

**Making a spiral inoculation with Eddy Jet 2:**
Note: it’s important to remember visiting the programming a spread section in this manual if settings are to be changed from default configuration.

1. If automatic feeding is activated, a sample beaker (containing the liquid sample to be processed) must be introduced into its slot. If manual feeding is activated this must be skipped.

2. A Petri dish is to be introduced in the device's platform. Petri plate grippers will ease this.
3. The green play button in the main menu must be pressed. A.) If controlled plate identification is activated the next section in the manual must be revised (“Controlled Identification”). B.) Point 4, 5, and 6 are to be read if manual feeding is activated. C.) If neither A nor B concern the operator only point 4 must be viewed.

(4.) If for any reason a spread must be cancelled, the red "X" button that will appear onscreen shall be pressed as the device operates. Continue to point 5 and 6 if manual feeding must be used, otherwise you are done.

**Loading Microsyringes**
Eddy Jet 2 will automatically ask operators to introduce a microsyringe pack whenever about to perform a spiral and in lack of microsyringes. The device must be involved in an inoculation in order to ask its operators to do this. An image of a cartridge with an arrow pointing inwards will appear onscreen. The cartridge has a set position, it must be introduced so that the words “EDDY JET” stand the right way up.

**Unloading Microsyringes**
Two circumstances might give way to microsyringe ejection:
I. The user might wish to remove these, whichever the reason.
II. The device may release a microsyringe cartridge whenever all microsyringes in a cartridge have been consumed.
The general settings menu must be accessed by pressing on the purple gear wheel button located in the main menu.

Once in the main settings menu, the microsyringe cartridge removal button must be pressed.

COLONY COUNTING

Counting colonies in a spiral inoculated plate requires a specific counting grid (which comes along with Eddy Jet 2). IUL strongly recommends the usage of manual (Colony Counter CAT.9000601) or automatic colony counters (Flash & Go CAT.90006010) to perform spiral colony counting. The use of the latter can genuinely streamline a lab’s workflow by avoiding the time-consuming procedure described in this section of the manual.
**Warning:** Use exclusively spiral counting grids provided by IUL S.A. for Eddy Jet 2. Normal colony counting (which requires counting all colonies) must be used to count Uniform spreads.

When enumerating manually, a simple process must be followed: colonies are to be counted only in a 1/8 sector of the counting grid (the counting grid already contains marked 1/8 sectors). The counting grid is divided into 4 ring sections (1,2,3 and 4) that have been furtherly divided into three rings (1c,1b,1a...). Ring sections 1 and 2 only will be used whenever 150 mm plates are being read.

The following formula must be used to calculate CFU concentrations:

\[ C = \frac{N' + N''}{(V/4)} \]

- \( C \) = CFU concentration = CFU \( \cdot \) ml\(^{-1}\)
- \( N' \) = CFU count in the first 1/8 ring sectors = CFU
- \( N'' \) = CFU count in the opposite 1/8 ring sectors = CFU
Counting is performed as follows:
Counting shall be restricted to the 3 and 4 ring sections of the counting grid for 100 mm Petri plates and to 1, 2, 3 and 4 ring sectors in 150 mm plates. Any colonies that appear outside of these boundaries are to be ignored. Counting shall be performed exclusively in a 1/8 sector of the counting grid, it must start at the outermost end of the grid and proceed inwards until a count of 20 colonies is met. From then on, only the colonies present in the last counted sector can be counted. Next, colonies that are present in the same rings of the opposed sector must be counted.

Note: an E-Mode 50μl distribution was supposedly used to inoculate the plate being counted in the following example.

\[ N' = N_{3c+3b} = 22 \text{ CFU} \]

The first count reaches 20 CFU in the 3b ring sector and it therefore stops here. Thus all colonies in the 3c and 3b ring sectors are counted. Then, the opposite end of the grid is counted in the same fashion:

\[ N'' = N_{3c+3b} = 18 \text{ CFU} \]
The second count in the 3c and 3b sectors reaches 18. Next, sample volume poured in the counted sectors (V) must be figured out. The total volume of the counted sectors appears in the laminated distribution table for spiral spreads. It's vital to choose the volume table that accounts for 100 mm Petri plates. In this case the E-Mode 50μl volumes for sections 3c and 3b (V3c+3b) must be found.

\[
V = V_{3c+3b} = 6'44 \mu l \cdot 10^{-3}ml/\mu l = 6'44 \cdot 10^{-3}ml
\]

Last, the variables are ready to be introduced into the formula.

\[
C = \frac{(N' + N'')}{V_{3c+3b}/4}
\]
\[
C = \frac{(22 CFU + 18 CFU)}{(6'44 \cdot 10^{-3}ml / 4)}
\]
\[
C = 2,4845 \cdot 10^4 CFU /ml
\]

**Universal Hettich Centrifuge**

**KEYPAD**

- Precooling
- RCF Change-over from RPM to RCF indication
- SELECT Selection of parameters
- START/IMPULS Starts centrifugation /
  Short cycle mode
- STOP/OPEN Stops centrifugation manually /Opens the lid

1. **LOAD SAMPLES**

   - Turn the POWER switch on the right side of the centrifuge ON
Select the appropriate rotor based on the volume of the sample(s). If you have to change the rotor, please be very careful to lift the rotor vertically to avoid bending the driveshaft.

Select the appropriate rotor based on the volume of the sample(s)

Push the OPEN button to open the lid. Insert sample(s) into the rotor making sure to place two samples opposite of each other to maintain balance.

If an odd number of samples need to be spun, make a counterbalance by filling an empty test tube or micro centrifuge tube with an equal volume of water.

Securely screw on and close the lid of the centrifuge.

2. CENTRIFUGE OPERATION

Using the SELECT button and the KNOB on the right, set the desired speed, time, and temperature on the centrifuge as follow:

- **P** Entry of the program number, 10 programmable memories
- **T/°C** Entry of the temperature in increments of 1 within a range of −20 °C to +40 °C
- **RCF** Entry the speed in increments of 10
- **RPM** Entry the speed in increments of 10
- **r/mm** Entry of the rotor radius in mm, only when you change rotor
- **t/min** Entry of the centrifuging time in minutes and seconds (max. 99 min : 59 sec)
- **्र** Entry of the acceleration ramp 1-9
- **्र** Entry of the braking ramp 1-9

Press the “Start” button and wait for the instrument to ramp up to the desired speed.

**Note:** It is normal to see a small vibration in the instrument as the speed increases, but any large vibration in the instrument or irregular noise may indicate that something has gone wrong with the run. Press the “Stop” button and make sure that the tubes are balanced properly.

When the run has completed and the rotor has come to a complete stop, push gently the lid on the front part and carefully remove the samples to prevent resuspension of the sediments.

Defrost chamber and wipe up accumulated moisture; water in the chamber will prevent good temperature control.

Turn POWER switch OFF when centrifuge is not in use.
NOTE: If you have any spills in the centrifuge, you must report them to the technician IMMEDIATELY. It is your responsibility to clean up any mess you have caused. If you experience any problems with the centrifuge, you must also report these to the technician immediately.

Termoscientific Sorvall ST 16 Centrifuge

Control Panel

The control panel contains the keys and displays of the centrifuge (only the power switch is located on the back of the device). All parameters can be selected and changed during operation.
Keys

The keys allow user intervention for controlling the operating mode as follows:

<table>
<thead>
<tr>
<th>Key</th>
<th>Display contents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start</strong></td>
<td>Normal start of the centrifuge</td>
</tr>
<tr>
<td><strong>Stop</strong></td>
<td>End run manually</td>
</tr>
<tr>
<td><strong>Open lid</strong></td>
<td>Automatic release (possible only when device is switched on). Emergency release</td>
</tr>
<tr>
<td><strong>Pulse</strong></td>
<td>By pressing the PULSE key, the centrifuge starts immediately and accelerates up</td>
</tr>
<tr>
<td></td>
<td>to the end speed. Releasing the key initiates a stopping process at the highest</td>
</tr>
<tr>
<td></td>
<td>braking curves.</td>
</tr>
<tr>
<td><strong>Change Value</strong></td>
<td>Use the arrow keys in order to modify the displayed value</td>
</tr>
<tr>
<td><strong>Snow Symbol</strong></td>
<td>Press the snow symbol key for prewarming or precooling the centrifuge.</td>
</tr>
<tr>
<td><strong>Changing the display mode</strong></td>
<td>Use the Change key to change the display mode. (Speed / RCF Value)</td>
</tr>
</tbody>
</table>
Switch on Centrifuge

1. Turn on the power switch on the back of the device. The device performs a self-check of its software.
   a. When the centrifuge lid is closed the following display shows:

   ![Display](image)

   The speed and time displays read 0. The temperature indicator displays the current temperature inside the rotor chamber. The preset acceleration and braking curves and the selected bucket are also displayed.

   b. When the centrifuge lid is open the following display shows:

   ![Display](image)

   The speed and time displays show the preset values. The temperature indicator displays the current temperature inside the rotor chamber. The preset acceleration and braking curves and the selected bucket are also displayed.

Lid Opening

1. Press the OPEN key.

   ![Warning]

   **WARNING** Do not reach into the crack between the lid and the housing. The lid is drawn shut automatically.

   Use the emergency release only for malfunctions and power failures (see “Mechanical Emergency Door Release” on page 7-2).

Close Lid

Close the lid by pressing down on it lightly in the middle or on both sides of it. One lock closes the lid completely.

   ![Warning]

   **WARNING** Do not reach into the crack between the lid and the housing. The lid is drawn shut automatically.

   **Note** The lid should audibly click into place.
Safety Statement, ESHI Research Institute

Rotor Installation

This system is used to automatically lock the rotor to the centrifuge spindle. The rotor does not have to be bolted on to the centrifuge spindle.

Proceed as follows:

1. Open the lid of the centrifuge and if necessary remove any dust, foreign objects or residue from the chamber. **AutoLock**™ and o-ring must be clean and undamaged.

![AutoLock™](image)

**Figure 4-1. AutoLock™**

2. Place the rotor over the centrifuge spindle and let it slide slowly down the centrifuge spindle. The rotor clicks automatically into place.

**CAUTION** Do not force the rotor onto the centrifuge spindle. If the rotor is very light, then it may be necessary to press it **onto** the centrifuge spindle with a bit of pressure.

3. Check if the rotor is properly installed by lifting it slightly on the handle. If the rotor can be pulled up, then it must be reclamped to the centrifuge spindle.

---

**Entering Parameters**

The Sorvall ST 16 / 16R offers you a total of 9 acceleration and 10 braking curves with which samples and gradients can be centrifuged.
**Running time preselection**

1. Press the key \( \uparrow \downarrow \) below the TIME display in order to open the runtime selection menu. The display shows the message "Set Time". Enter the desired runtime in H.mm.

\[
\begin{array}{c}
0.14 \\
\text{Set time H.mm}
\end{array}
\]

2. Enter the desired value by pressing the key \( \uparrow \downarrow \) repeatedly, until the desired value shows.

**Continuous operation**

1. Press the START key \( \rightarrow \) . During continuous operation, the centrifuge will continue running until you stop it manually.

\[
\begin{array}{c}
\text{HOLD Non-Stop mode}
\end{array}
\]

**Preselecting the temperature**

You can preselect temperatures between -10 °C and +40 °C.

To set the temperature, proceed as follows:

1. Press the key \( \uparrow \downarrow \) below the TEMPERATURE display in order to open the temperature selection menu. The display shows "Set temp":

\[
\begin{array}{c}
\text{Set temp} -10^\circ C
\end{array}
\]

2. Enter the desired value by pressing the key \( \uparrow \downarrow \) repeatedly, until the desired value shows.
Safety Statement  ESHI Research Institute

Prewarming or precooling the centrifuge

**Saving programs**

1. Enter the program parameters.

2. Press any of the program store keys for 4 seconds.

**Imbalance indicator**

If a load is imbalanced, this will be indicated at speed higher than approx. 300 rpm by the message "Imbalanced load".

The run will terminate.

**Stopping the centrifugation program**

**With preset running time**

Close Usually the running time is preset and you only have to wait until the centrifuge stops automatically when the preset time limit expires.

As soon as the speed drops to zero, the message END will appear in the display. By pressing the OPEN key, you can open the lid and remove the centrifuge material.

You can also stop the centrifuging program manually at any time by pressing the STOP key.

If the speed setting is higher than the maximum permissible speed or RCF-value for the particular rotor, then the display will show the message max. 4,700 rpm once the centrifuge has been started.

Within 15 seconds you can apply this value by pressing the START key again, and the centrifuging program will continue. Otherwise the centrifuge will stop and you will have to enter a valid number.

You cannot open the lid as long as the centrifuge is running.
## SimpliAmp™ Thermal Cycler

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Button" /></td>
<td>Returns to the previous screen</td>
</tr>
</tbody>
</table>
| ![Button](image2) | 1. Current temperature  
2. Time remaining  
3. Status of the block (pre-heating, running, and so on)  
4. Username |
| ![Button](image3) | Scrolls up and down through a list of items. |
| ![Button](image4) | View other stages |
| ![Button](image5) | Closes the current modal window. |
| ![Button](image6) | Indicates whether the Wi-Fi is on or off. |
| ![Button](image7) | Indicates whether a USB is inserted into the instrument. |
| ![Button](image8) | Indicates whether the instrument is connected to the network. |
Use the Touchscreen

Create a new run method

1. In the Home screen, touch **New Method**.

The Setup Run screen opens up.

2. In the Setup Run screen, touch **Open Template**, **Open Method**, or **Incubate**.

   a. Touch **Open Template** to create a new method using an existing template. Select from the categories listed in the Select Method Template screen.

   b. Touch **Open Method** to create a new method using an existing run method. Select from the methods listed in the Select Method screen.
3. Irrespective of the source for creating a new run method, once you select one of the methods, you will come to the Method Edit screen.

The Edit Method screen serves as a preview of the run method you have selected. If you do not want to edit any of the parameters, you can start a run directly by touching **Next**.

1. In the Edit Method screen for the run method that you have selected, touch **Edit** or anywhere on the graphical temperature profile to start editing the parameters.

You will see that each of the numbers are surrounded by black fields indicating that they are editable. At this point, you can edit any of the temperatures, times heated cover, number of cycles, and other parameters seen on the screen.

2. Touch **Manage Steps** to manage the steps; for example, add or delete a stage or step, or set more advanced parameters.
   a. Touch **Add Steps** to add a step.
   b. Touch **Remove Steps** to delete a step.
   c. Touch **Add Stages** to add a stage.
   d. Touch **Remove Stages** to delete a stage.

The '+' buttons appear while adding a step or stage, while the '-' buttons appear while deleting a step or stage.
Touch **Done** to finish managing the steps or **Advanced Options** to modify the advanced parameters.

3. Touch **Advanced Options** to edit the VeriFlex™ blocks, AutoDelta, Ramp Rates, and Simulation Mode parameters.

![](image)

Touch **Simulation Mode** to set the simulation mode. The simulation modes include the following:

- No Simulation
- Applied Biosystems™ 2720
- Bio-Rad™ T100™
- Bio-Rad™ MyCycler™
- MJ Research™ PTC-200
- Eppendorf™ Mastercycler® gradient
- TaKaRa® Dice PCR Thermal Cycler
- BIOER™ XP Cycler

Note: Simulation modes make SimpliAmp™ Thermal Cycler perform like another instrument. This is done by simulating the ramp rate of another instrument.

![](image)

In the Simulation Mode screen:
a. Select the instrument you would like to simulate. Touch **No Simulation** to run the instrument in the default mode
b. Touch **Done** to save the selection or **Cancel** to exit the screen.
c. Use the button in the top right corner of the screen to return to the Advanced Options screen.

- Touch **Ramp Rates** to edit the ramp

![Ramp Rates Screen](image)

a. Touch a particular ramp rate to open the editor to edit the ramp rate.
b. Touch **Done** to save the selection or **Cancel** to exit the screen.
c. Use the button in the top right corner of the screen to return to the Advanced Options screen.

Note: If you set a simulation mode other than No Simulation, then the ramp rate will be locked and unavailable for editing.

- Touch **VeriFlex™** to edit the VeriFlex™ blocks parameter.
  a. Touch the icon to choose the steps you want to apply VeriFlex™.

![VeriFlex™ Screen](image)

b. In the Edit VeriFlex™ screen, adjust the temperature range across the block for the selected steps.
– Touch **Remove VeriFlex™** to remove the VeriFlex™ blocks setting.
– Touch **Done** when finished or **Cancel** to exit the screen.
- Touch **Done** to return to the Edit Method screen.
- Use the button in the top right corner of the screen to return to the Advanced Options screen.

• Touch **AutoDelta** to apply the AutoDelta setting to a step.
  
  a. Touch the icon to choose the steps you want to apply AutoDelta.

b. In the Edit AutoDelta screen, enter the information for setting up AutoDelta.
   - Enter the Starting Cycle.
   - Enter the DELTA temperature and/or time. Use the ‘-’ and ‘+’ toggle button to set the DELTA values to be either negative or positive, respectively.

Touch **Remove AutoDelta** to remove the AutoDelta setting.

Touch **Done** when finished or **Cancel** to exit the screen.
Once you have edited a run method, you can save the method to the destination folder by touching **Save As** in the Run Method preview screen or choose to start a run without saving the run method.

4. Touch **Save As** to save the edited run method.

   a. In the Save As screen, enter a name of the edited run method.
   b. Touch a folder to select a destination folder where you want to save the run method.

5. Touch **Save** when you are done.

---

**Load samples into the instrument**

1. Lift the sample tray from the splash-free 96-well base and place it in the sample block(s).
2. Place the MicroAmp™ Tray or Plate onto the sample block(s) so that well A1 is at the upper left corner of the tray, as shown in the following figure:

![Image of a MicroAmp™ Tray]

**Perform a run**

Prepare your samples and load the sample block(s) as described before

1. Close the cover.

2. Start a run from the Home screen in one of the following ways. Touch:
   - New Method
   - Open Method
   - Incubate
   - Status dial

3. Touch Next.

The Run Parameters screen is displayed:

![Image of Run Parameters screen]

4. Touch the field under Run ID, then enter the applicable information in the Enter the Run ID screen.
   The default Run ID is YYYYMMDDHHMM, where “YYYYMMDD” is the date and “HHMM” is the current time.
   You can choose to retain the default Run ID.
5. Touch Add Comment to enter any comments about the run.
6. Touch Start Run. The cover is heated to the required temperature, then the run begins.
   While the run is in progress, the Home screen is displayed. When the run is complete, the Status Dial on the Home screen displays Done and Remove Samples.
7. Touch Done once you have removed the samples.
   It is possible to perform a run on multiple instruments, please contact the technician for assistance on advance functions of the thermocycle.
Monitor a run

After a run has started, the Home screen appears again with the dials updated with current information on the run. The dials display the following run information:

- Current block temperature
- Time remaining since the run started
- Run status

To monitor the run progress, touch the dial that is running to go the Run Monitoring screen.

You can follow the status of a run using the Run Monitoring screen as shown in the following figure:

The screen shows the run method profile and additional information that does not appear in the Dial on the Home screen.
View and export the run report

To view a report:

1. In the Home screen, touch Settings.
2. In the Settings screen, touch Run History.
3. In the Run History screen, touch the Run ID of the run you want to view. The report is displayed.
4. Touch Export to save the report on a USB drive. Touch Print.

Operating the Thermo Scientific Sorvall Legend Micro 21R Centrifuge

Switching on the centrifuge

Set the main power switch of the instrument. The display shows that the instrument is going through an internal check of its software. After this check the display switched into the current value mode. The speed and the remaining run time show 0; the refrigeration unit display shows the current temperature of the sample.

Opening the lid

The main power must be on to open the lid. To open the lid press the “open-lid” button.

Closing the lid

The centrifuge lid is locked by slightly pressing down the front part of the lid. DO NOT SLAM THE LID!

Filling the centrifuge tubes

The smaller the centrifuge imbalance, the better the separation, because separate zones are no longer perturbed by vibration. It is therefore important to balance the centrifuge tubes as well as possible. To minimize imbalance you should fill the tubes as evenly as possible. You can achieve this by eye, however, you must nonetheless ensure that opposite tubes are filled to the same level.

Placing the tubes in the rotor

The rotor must be loaded symmetrically. When loading the rotor only partially, you must ensure that opposite bores always receive tubes of equal weight (when centrifuging a single sample, place a centrifuge tube e.g. filled with water opposite). The following gives examples for proper loading:
properly loaded rotors
The following are examples of improperly loaded rotors:

![improperly loaded rotors](image)

After you have loaded the tubes close the rotor lid. After you have closed the rotor lid close the centrifuge lid.

**Entering Parameters**

**Switching from speed to RCF (relative centrifugal force) display**

Upon turning on the centrifuge the speed display is set. By activating the selection key you can switch to the RCF-value or change between rpm and RCF displays:

![RCF display](image)

**Selecting speed**

The centrifuge speed can be set to a minimum of 300 rpm. You can adjust the speed in 100 rpm increments. Proceed as follows:

3. Press one of the set keys (˄ for increase or ˅ for decrease) in the field of speed of the control panel.
4. If you hold the key pressed, the display changes continuously at first slowly, and after a few seconds at an accelerated pace to the higher or lower values.
5. Release the key as soon as you have reached the desired value and fine tune if necessary by repeatedly briefly pressing on of the keys. The first digit behind the decimal point flashes for a few seconds and then switches permanently into the current value mode. The new pre-selected speed is now stored.

**Entering the RCF value**

You can adjust the RCF pre-selected value in steps of 100 g. The RCF value can be set to a minimum of 100 x g. You can adjust the RCF values the same as you adjust the rpm values. The displayed RCF value is always corresponding to the maximum of centrifuge radius of the Micro liter rotor 24 x 2mL. For other rotors please calculate the RCF value.

**Selecting the run time**

You can select a run time between 1 and 99 minutes or continuous operation [hd].

Run time selection
Proceed as follows:

1. Press one of the “set” keys (˄ for increase or ˅ for decrease) in the field of time of the control panel.
2. If you keep the key pressed, the display changes at first slowly and after a few seconds at an accelerated pace to the higher or lower value.
3. Release the key as soon as you have reached the desired value and fine tune if necessary by repeatedly briefly pressing on of the keys. The run time display flashes for a number of seconds, then changes to permanent display of the current value mode. The new pre-selected run time is now stored.

**Continuous operation**

To operate the centrifuge in the continuous mode, you must press and key (˅) until the display changed to “hd” for “hold”. In this mode the centrifuge runs until you stop the run by manually pressing the “stop” button.

**Setting the temperature**

To determine the sample temperature, operate as advised:

1. Press one of the “set” keys (˄ for increase or ˅ for decrease) in the field of “temperature” of the control panel. By pressing the key briefly, you increase or decrease the temperature in steps of 1 °C. This option is supposed to be used for small changes and fine tuning.
2. If you keep the key pressed, the display changes at first slowly and after a few seconds at an accelerated pace to the higher or lower values.
3. Release the key as soon as you are close to the desired value and fine tune if necessary by repeatedly briefly pressing the key. The display flashes for a few seconds and then turns to permanent display of the current value mode. The new pre-selected temperature is now stored.

The refrigeration starts operating after closing the centrifuge lid, at once if the pre-selected temperature is below the currently temperature of the rotor chamber.
INCUBATOR SHAKER

START THE UNIT

Turn on the electrical power supply to the shaker incubator by pushing the MAIN SWITCH. The unit is now in the running mode.

The initial interface displays the default setting values of speed, temperature, timer, and running mode. Touch the keys on the screen gently (please don’t use too much force), the value of speed, temperature, timer, and running mode can be edited to your request.
SYSTEM CONFIGURATION

Touch the SET key on the screen, the unit enters into system parameters setting, all the parameters can be set as illustrated below

**FUNC**: setting the running mode of the incubator shaker. The incubator shaker can be set in normal Mode or Program Running Mode.

**CTRL**: Control the P.I.D. values. (Please don’t touch it, only the manufacturer can modify it)

**FIX**: setting temperature, speed, timer values, in normal mode.

**PROG**: setting the speed, temperature, timer values in program mode.

**CORR**: correction of temperature parameters. (Please don’t touch it, only the manufacturer can modify it)

**CALI**: calibration of temperature difference. (Please don’t touch it, only the manufacturer can modify it)

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SPEED, TEMPERATURE, TIMER SETTING IN NORMAL MODE
Touch the FIX key on the System Configuration page, the unit enters into Normal Mode Setting, the speed, temperature, timer values can be edited to your request.

**Speed setting:** touch the SPEED key, its colour changes to blue, indicating the speed value can be changed now. Push the digital numbers on the rightside keyboard to set your desired speed value, then touch the ENTER key to confirm it. The highest temperature value can be set is 300rpm to this incubator shaker.

**Time setting:** touch the TEMP key, its colour changes to blue, indicating the timer value can be changed now. Push the digital numbers on the keyboard to set your desired temperature value, then touch the ENT key to confirm it. The highest temperature value can be set is 60 C° to this shaker incubator.

**Time setting:** touch the TIME key, its colour changes to blue, indicating the timer value can be changed now. Push the digital numbers on the keyboard to set your desired time value, then touch the ENT key to confirm it.

After all the above setting, touch the RET key to return back to the initial interface.

**FUNCTION SETTING**

Touch the FUNC key on the System configuration page, the unit enters into function setting, the function can be set as illustrated below:
MODE FIX PROG
FIX: meaning fixed values, if it is set, the unit runs in steady status mode, or normal mode.
PROG: meaning programmable running mode. (The incubator shaker must be stopped before setting)

KEEP ON OFF
KEEP: keep the temperature value when the unit is stopped or in the end of program running. When ON is chosen, the temperature is maintained, when OFF is chosen, the temperature is cancelled. (The incubator shaker must be stopped before setting)

COOL ON OF
COOL: refrigeration setting. When ON is chosen, the refrigerator is started, when OFF is chosen, the refrigeration is cancelled. (The incubator shaker must be stopped before setting)

NRUN ON OFF
NRUN: non-volatile memory. When ON is chosen, the memory is activated after an electrical power failure, when OFF is chosen, the memory is cancelled. (The incubator shaker must be stopped before setting)

PROGRAM SETTING
Touch the PROG key on the System Configuration page, the unit enters into programmable running mode, the program segment can be defined as illustrated
SEG: Program Segment Number. A total of 9 program segment can be defined and stored in the memory. Touch the LAST or NEXT key can edit your desired program segment.

RAMP: Temperature Ramp Time (temperature increase time). Touch the RAMP key, its colour changes to blue, indicating the current temperature ramp time can be edited. Push the keyboard to set your desired temperature ramp time value, then touch ENTER key to confirm it.

SPEED: end speed of the current program segment. Touch the SPEED key, its colour changes to blue, indicating the speed value can be edited. Push the keyboard to set your desired speed value, then touch the ENT key to confirm it.

TEMP: End temperature of the current program segment. Touch the TEMP key, its colour changes to blue, indicating the temperature value can be edited. Push the keyboard to set your desired temperature, then touch the ENT key to confirm it.

HOLD: Temperature Soak Time (time for maintaining the set temperature value). Touch the HOLD key, its colour changes to blue, indicating the temperature soak time value can be edited. Push the keyboard to set your desired temperature soak time, then touch the ENT key to confirm it.

At the end of program setting, you must also define the cycle times (maximum 99 times) the P.HB value (guaranteed soak band). If the P.HB value is set at 0 C°, the incubator shaker starts temperature soak immediately after ramp. Touch the ENT key to confirm it.

ALLARM SETTING

Touch the ALM key on the System Configuration page the unit enters into alarm setting as illustrated below
Touch the ALDT key, its colour changes to blue, indicating the temperature deviation alarm value can be defined. Push the keyboard to set your desired temperature deviation alarm value, then touch ENT key to confirm it.

Touch the ALDS key, its colour changes to blue, indicating the speed deviation alarm value can be defined. Push the keyboard to set your desired speed deviation alarm value, then touch ENT key to confirm it.

(if the temperature/speed deviation alarm value were set at 0, the alarm is cancelled).

**PRINTER SETTING**

Touch the PRT/COM key on the System Configuration page, the unit enters into printer setting as illustrated below

Touch the PRT key, its colour changes to blue, indicating the printing timer value can be defined. Push the keyboard to set your desired printing timer value, then touch the ENT key to confirm.