wellcome-MRC cambridge stem cell institute

Institute Safety Manual

wellcome

UKRI Medical Research Council

UNIVERSITY OF CAMBRIDGE

Contents

Health and Safety Policy

The Institute takes very seriously its responsibility to look after the health, safety and welfare of all employees and students. Every reasonable effort will be made to provide a safe and healthy environment for teaching and research. However, without the active co-operation of all employees and students this objective cannot be achieved. For this reason, everyone is expected to take reasonable care of their own health and safety and that of others who may be affected by their acts or omissions at work.

The underlying principle of the Health and Safety Policy is that 'those who create the risks must manage and control them'.

All members of the Institute have a duty to:

- Have a positive approach to their own safety and that of others;
- Always follow standard operating procedures or guidance notes, including the current Institute guidelines for safe working during the COVID-19 pandemic found at https://www.stemcells.cam.ac.uk/instituteonly
- Comply with the rules of good housekeeping and laboratory practice;
- Read or carry out risk assessments before beginning any new procedure;
- Visually inspect electrical equipment before use and not use any item that is suspected of being faulty;
- Report all accidents, incidents or near misses to the Departmental Safety Officer.

Trained first aiders are on hand to provide immediate first aid. Contact telephone numbers are displayed on notice boards throughout the building and on the intranet.

University Security provide a 24 hour operation and can be contacted outside of normal working hours:

- Routine calls: 01223 (3)31818
- Emergencies: 101 or 01223 (7)67444

All faulty equipment should be reported to the Floor Technician or Principal Technician.

The Institute will make available safety training and review its safety organisation as required.

The University Health and Safety Office (HSO) website provides detailed information on safety matters (www.admin.cam.ac.uk/offices/safety/).

Professor Tony Green
Director
Wellcome-MRC Cambridge Stem Cell Institute

October 2020

Organisation and Responsibilities

In order to fulfil this policy the following structure is in existence:

The Director has overall responsibility for health and safety in the Institute and requires that safe systems of work are in place and policies are implemented. The Director is obliged to ensure that standards in the workplace are established that comply with statutory legislation, approved codes of practice and University policy. This includes, as far as reasonably practicable, that everyone (including members of other Departments in the University and outside workers) who may be affected by the activities of the Institute, is aware of the health and safety arrangements and has appropriate information, equipment, training and supervision to enable risks to health, safety and the environment to be identified and controlled.

Research Group Heads and Facility Managers are charged with responsibility for safety within their own areas. They must ensure that employees, students and visitors are aware of likely hazards, have read or carried out the necessary risk assessments and are given appropriate training. Thus, instruction in and observation of, safe working practices (which should include defined emergency procedures) are also their responsibility. They must ensure that risk assessments are in place and safe experimental protocols exist for equipment in their areas. They must ensure all equipment is safe to use, has been electrically tested and, where appropriate, has valid safety/service certificates. They must ensure that the appropriate Personal Protective Equipment is available and worn.

Each employee and student has individual responsibility with regard to the health and safety of themselves and others who may be affected by their work. They must:

- Carry out/read and follow the appropriate risk assessments for all work being undertaken;
- Correctly use and maintain any protective equipment provided;
- Be responsible for the health and safety of visitors, contractors, and temporary employees working in or visiting their areas;
- Attend training as required and keep up to date with any changes in policies, practices and procedures;
- Know the locations of alarm points, escape routes and assembly point, together with fire and emergency procedures;
- Report accidents, near misses, or unsafe practices or equipment and assist in the investigation of these with the objectives of:
  a) Introducing or improving methods to prevent recurrence;
  b) Correcting practices or equipment faults.

Specific Safety Responsibilities within the Institute

Business & Operations Manager:
Responsible to the Director for co-ordination, liaison, advice and checking that agreed safety policies and practices are being carried out. He/she monitors the medical standards with regard to pre-employment and continued employment, and works closely with the Departmental Safety Officer and University Safety Advisers.

Safety Advisers:
Members of the Institute who are appointed in writing by the Director to provide advice and guidance to the Director and the Safety Committee. The responsibilities of each adviser are as follows:

The ***Departmental Safety Officer (DSO)*** provides support to the Director, Safety Advisers and Business and Operations Manager by:

- Investigating and following up accidents/incidents in the Institute;
- Organising and attending safety meetings, tours and inspections, producing notes, reports etc. and ensuring actions are followed through;
- Co-ordinating and retaining records of safety equipment testing, including fume cupboards, microbiological safety cabinets, autoclaves, electrical testing etc.;
- Monitoring implementation of Health & Safety policy and reporting failure to comply to the Research Group Head or Director, who is responsible for ensuring the appropriate action is taken;
- Providing advice and guidance;
- Ensuring new members of the Institute attend a Health and Safety Induction Talk, registering them where necessary, referring them to the appropriate Safety Advisers for specific advice, information and training;
- Arranging additional training, where appropriate, on behalf of the Business & Operations Manager;
- Liaising with the University Health and Safety Division, School Safety Adviser and Enforcement Authorities on all matters of health and safety.

Radiation Protection Supervisors (RPS) assist the employer in complying with the requirements of the Ionising Radiations Regulations, 2017. They provide support to the Director, Safety Advisers and Business and Operations Manager by:

- Ensuring that new users are registered and receive adequate training;
- Ensuring that users comply with the Local Rules;
- Co-ordinating and monitoring the use and disposal of radioactive materials;
- Co-ordinating the annual calibration of radiation monitors.

The ***Biological Safety Officer (BSO)*** provides support to the Director, Safety Advisers and Business and Operations Manager by:

- Establishing, maintaining and servicing a Departmental Biological Safety Committee and GM Committee;
- Co-operating with University staff, outside specialists and inspectors on all matters of biological health and safety, including genetically modified organisms (GMOs);
- Ensuring that approved Risk and COSHH assessments are in place for the safe use of biological agents, that control measures are sufficient and correct fumigation/disinfection procedures are being followed;
- Ensuring statutory notifications/authorisations are in place as required for biological work being carried out in the Institute e.g. HSE, APHA, DEFRA, EA etc;
- Ensuring that the Institute implements policies to cover waste disposal, safe transport and storage of biological material;
- Liaising with Occupational Health in the provision of health surveillance and monitoring where necessary;
- Assisting with inspections of Institute premises where biological work is being undertaken;
- Investigating and following up biological accidents/incidents.

The ***Laser Safety Officer (LSO)*** provides support to the Director, Safety Advisers and Business and Operations Manager by:

- Maintaining a register of all Class 3 and Class 4 laser equipment in the Institute;
- Ensuring that adequate risk assessments, local rules and procedures are in place;
- Ensuring users receive training in the safe use of laser systems and maintaining a register of authorised users;
- Providing local advice and guidance on control measures and working with lasers;

- Carrying out inspections of areas where Class 3B and 4 lasers are used, ensuring that policies and local rules are followed. Taking appropriate action regarding non-compliance or inadequacy in procedures;
- Investigating and following up any accidents/incidents involving a laser, even if no injury occurred.

The ***Fire Safety Manager*** is appointed by the School of Clinical Medicine to support all Institutes in the building by:

- Ensuring a fire risk assessment and any necessary preventative and protective measures are in place;
- Ensuring that the building is equipped with appropriate fire-fighting equipment and with fire detectors and alarms;
- Implementing a system of routine testing and maintenance of fire detectors, alarms, fire doors etc. and ensuring this is documented;
- Ensuring that emergency exit routes are signposted and kept clear at all times;
- Implementing appropriate procedures, including evacuation drills, to be followed in the event of serious and imminent danger;
- Carrying out routine audits of fire safety arrangements at least once a year;
- Providing staff, students and visitors with adequate fire safety training;
- Ensuring a sufficient number of suitably trained and experienced Fire Wardens are appointed to assist with emergency procedures.

The Institute Safety Committees

Supporting this structure and to recognise the need for co-operation and joint responsibility on an Institute-wide level, the Safety Committees include the Safety Advisers alongside staff and student representatives.

On behalf of the Director, the Safety Advisers and Departmental Safety Officer provide an overall advisory, monitoring and audit role. Reports are presented to the Safety Committee for authorisation on policy, procedures and actions.

This may involve:

- Considering reports from authorities advising on legislative requirements;
- Recommending procedures, practice and training needs;
- Monitoring general housekeeping and specific safety issues such as use and disposal of radiation, biological and chemical materials;
- Ensuring that the principles of As Low As Reasonably Practicable (ALARP) and Best Available Technology (BAT) with respect to the usage and disposal of radionuclides are followed;
- COSHH, GMO and other risk assessments;
- Compliance with the Human Tissue Act Codes of Practice;
- Electrical testing;
- Carrying out inspections;
- Introducing/ensuring maintenance and calibration checks;
- Establishing emergency procedures.

Members of the Institute Safety Committee:

Safety Role	Name	Appointment in Institute	Contact Details
Chair of Safety Committee	Prof. Tony Green	Director	arg1000@cam.ac.uk
Business & Operations Manager	Mrs Anthea Stanley	Business & Operations Manager	ajs333@cam.ac.uk
Departmental Safety Officer	Dr Stephanie Hall	Principal Technician	slh60@cam.ac.uk
Fire Safety Manager	Mr Ross Coates	Building Manager	rec60@medschl.cam.ac.uk
Biological Safety Officer	Dr George Giotopoulos	Postdoctoral Research Associate	gg320@cam.ac.uk
Deputy Biological Safety Officer	Dr Stephanie Hall	Principal Technician	slh60@cam.ac.uk
Laser Safety Officer	Mr Peter Humphreys	Imaging Facility Manager	pdh36@cam.ac.uk
Chair of Biological & GM Safety Committee	Dr Sanjay Sinha	Clinical Senior Research Fellow	ss661@cam.ac.uk
Radiation Protection Supervisor	Dr Daniel Hodson	Clinician Scientist	djh1002@hermes.cam.ac.uk
Human Tissue Act Person Designated	Dr Joanna Baxter	Senior Research Associate	ejb60@hermes.cam.ac.uk
PI representative	Dr Daniel Hodson	Clinician Scientist	djh1002@hermes.cam.ac.uk
Group Representative	Dr Peter Holt	Lab Manager (Sinha lab)	pjh1000@cam.ac.uk
Student Representative	Ms Antonella Santoro	PhD student	as2550@cam.ac.uk
Support Staff Representative	Mr Peter Humphreys	Imaging Facility Manager	pdh36@cam.ac.uk
School of Clinical Medicine Safety Officer	Dr Keff Tibbles	N/A - ex officio	kt10001@medschl.cam.ac.uk
School of Biological Sciences Safety Officer	Mr Mark Elsdon	N/A - ex officio	mje23@admin.cam.ac.uk

Members of the Institute Biological and GM Safety Committee:

Safety Role	Name	Appointment in Institute	Contact Details
Chair of Biological Safety Committee	Dr Sanjay Sinha	Clinical Senior Research Fellow	ss661@cam.ac.uk
Biological Safety Officer	Dr George Giotopoulos	Postdoctoral Research Associate	gg320@cam.ac.uk
Deputy Biological Safety Officer	Dr Stephanie Hall	Principal Technician	slh60@cam.ac.uk
Human Tissue Act Person Designated	Dr Joanna Baxter	Senior Research Associate	ejb60@hermes.cam.ac.uk
Tissue Culture Facility Manager	Sally Lees	Tissue Culture Facility Manager	sal61@cam.ac.uk
Histology Facility Manager	Irina Pshenichnaya	Histology Facility Manager	ip315@cam.ac.uk
PI Representative	Dr Ingo Ringshausen	Clinician Scientist	ir279@cam.ac.uk
PI Representative	Dr Joo-Hyeon Lee	Sir Henry Dale Fellow	jhl62@cam.ac.uk
School of Clinical Medicine Safety Officer	Dr Keff Tibbles	N/A - ex officio	kt10001@medschl.cam.ac.uk
School of Biological Sciences Safety Officer	Mr Mark Elsdon	N/A - ex officio	mje23@admin.cam.ac.uk

Fire Safety

Fire Evacuation Instructions

When the fire alarm sounds, evacuate immediately via the nearest available exit and proceed to the assembly point on the Boulevard, adjacent to the east side of the building. Do not attempt to re-enter until permission is given by the Fire Safety Manager/Deputy.

Fire Wardens have been appointed to check that each area of the building is clear of people. Follow their directions.

If you discover a fire, raise the alarm by operating the break glass points located in the corridors or near to the stairwells. Evacuate the building immediately.

If you find a fire out of hours and/or hear the alarm then an emergency call on 31818 (or 01223 331818 from a mobile) to Security should be made as a precaution in case of a failure in the fire link alarm system.

Fire extinguishers are primarily intended to facilitate your exit from the building should a fire break out. You are not expected to use them otherwise. The priority is always to raise the alarm, and evacuate the building. The University provides free training in extinguisher use and in basic fire awareness. Ask the Fire Safety Manager/Deputy for details.

Difficulties evacuating

If you believe it might be difficult for you to evacuate the building quickly when the emergency alarm sounds (for example, you have an injury affecting your mobility, or a hearing impairment) you must bring this to the attention of the Fire Safety Manager/Deputy so that special arrangements can be made. If necessary a Personal Emergency Evacuation Plan (PEEP) will be produced to support your evacuation from the building.

Reducing false alarms

To reduce unnecessary evacuations, anyone doing lab work that might generate excessive steam, heat, smoke or burning odours should contact the Fire Safety Manager/Deputy before commencing so an assessment can be made and the appropriate control measures put in place.

Toasters are not permitted in the kitchens but are available in the Café.

Out of hours working

Out of hours is defined as before 07.00 and after 19:00 Monday to Friday and all day Saturday, Sunday and Bank Holidays. When this is operationally necessary, research groups and facility managers must provide adequate supervision, communication and contact arrangements. The worker must sign the out of hours sheet located in reception.

Contact security in the event of an incident:

- Routine calls: 01223 (3)31818
- Emergency calls - internal: 101
- Emergency calls - external: 01223 767444

Lone working

Lone working in any of the laboratories is to be avoided. When this is operationally necessary, a risk assessment must be carried out in consultation with the Departmental Safety Officer. Another person must be aware of when you begin and complete work and emergency contact arrangements must be in place.

The Building Services Team can provide a lone worker alarm for use if lone working out of hours.

For further information consult http://www.safety.admin.cam.ac.uk/publications/hsd052m-lone-working

Staff and Student Travel, Fieldwork and Work away from Cambridge

When a staff or student member of the University travels and/or works away from the University on University or Institute business the University retains its legal duty of care for their health and safety and the Institute is required to have risk assessments in place. This applies to all types of work and travel in the UK and overseas including attending conferences, research or work placements and collaborator meetings. The complexity of the risk assessment required will depend on the level of risk.

Low risk activities will be managed via a declaration of risk assessment for low risk working away. Low risk activities are where the hazards and consequences are similar to those encountered doing low risk work in Cambridge (e.g. office work, attending lectures), the duration is under 30 days, there is no specific UK Foreign and Commonwealth Office (FCO) rating for the location and there are no perceived individual factors that would increase the risk.

Activities undertaken that are not covered by the low risk assessment must be assessed individually. In these circumstances it is the affected staff or student member's responsibility to notify the Business & Operations Manager (Anthea Stanley ajs333@cam.ac.uk) so that activity-specific medium or high risk assessments can be undertaken.

General Laboratory Guidance

Everyone working in the laboratories is expected to adhere to the following guidelines:

1. Work carefully, tidily and follow good housekeeping practices at all times.
2. No eating, drinking, smoking, chewing (food or nails) or application of cosmetics is allowed in laboratories. Food or drink must not be stored in laboratory refrigerators or cold rooms.
3. Mouth pipetting is forbidden. Use mechanical pipetting devices.
4. Laboratory personnel must wear suitable protective clothing, e.g. laboratory coats, in the laboratory at all times and gloves, ear defenders and safety spectacles as recommended by risk assessments, together with sensible, appropriate shoes and personal clothing in which to work.
5. Laboratory coats or gloves must not be worn in office areas, seminar rooms/lecture theatres or areas designated for consumption of refreshments e.g. break-out areas and café.
6. Gloves must not be worn when opening doors or touching any other item that may be handled by people not wearing gloves e.g. phones and computer keyboards.
7. Safety spectacles must be worn when carrying out any procedure where there may be any risk of eye injury or contamination.
8. Any wounds or abrasions to the hands should be covered with a waterproof dressing before starting work.
9. Long hair must be tied back.
10. Samples or reagents stored in the laboratory, cold rooms, incubators, refrigerators and freezers must be clearly labelled with the contents, date, owner's name and hazard label, if appropriate.
11. Items being transported should be contained in clean, secure containers. Transport of open vessels containing liquid is not permitted. Personnel should not travel in lifts with liquid nitrogen.
12. Maintain good personal hygiene. Wash hands before leaving the laboratory.
13. Clear up any spillage promptly. Fill in the Spills book if necessary. Report major breakages and spillages to the Departmental Safety Officer.
14. Know and follow the correct waste disposal arrangements.
15. Use Winchester carriers when transporting Winchesters/bottles.
16. Ensure all gas cylinders (including empty ones) are correctly supported and secured.
17. Alert people, verbally and with written notices, if you are doing something that is potentially hazardous, or that might affect services to other people's equipment.
18. Know the appropriate emergency procedures and the locations of first aid boxes and emergency exits.
19. Keep corridors, walkways and fire escape routes free of obstructions.
20. Leave fire doors closed, unless they are fitted with a system which closes them automatically in the event of fire.
21. Apparatus left on overnight or operating continuously should be labelled accordingly. The worker responsible should check the apparatus is safe, presents no danger of flood, fire or explosion, and is appropriately clamped if connected to running water.
22. Visitors to laboratories must be accompanied. Children are NOT allowed in these areas.
23. When leaving the Institute, all samples to be retained in the Institute should be listed and passed to a person who will then be responsible for their correct use, storage and final disposal. Unwanted chemicals, cultures, biological samples etc. should be disposed of in the correct manner prior to leaving. Benches and equipment should be cleaned and decontaminated. Actions taken should be reported to the Departmental Safety Officer and the appropriate Safety Adviser

Accidents and Incidents

All accidents, incidents or near misses, however trivial, must be reported using the University Safety Office's online AssessNet system. All incidents, however minor, should be reported via the portal, which can be accessed by clicking the link for 'Portal Access' on the following page:

https://www.safety.admin.cam.ac.uk/subjects/accidents-incidents

The DSO will be automatically alerted when you submit a report and will investigate the incident.

Risk Assessment

Risk assessment is an essential strategy in the prevention of accidents, injuries and ill health at work. It is also a legal requirement under the Management of Health and Safety at Work Act 1974, the Control of Substances Hazardous to Health Regulations 2002, the Dangerous Substances and Explosive Atmospheres Regulations 2002 and the Genetically Modified Organisms (Contained Use) Regulations 2014.

Risk assessment is a structured and systematic procedure for identifying hazards, evaluating risks and implementing control measures to reduce the risks to a tolerable level, as far as is reasonably practicable.

The 5 steps to Risk Assessment:

1. Identify the hazards;
2. Identify the people who may be harmed and how;
3. Evaluate the risk from the hazard - decide whether existing precautions are adequate and identify further control measures that may be required;
4. Record your findings and implement them;
5. Review your assessments regularly and update if necessary.

BEFORE commencing any work, employees, students and visitors must read all relevant risk assessments. These should be available as hard copies in your laboratory.

All new employees or students need to complete an Individual Staff Risk Assessment for COVID-19 before commencing work.

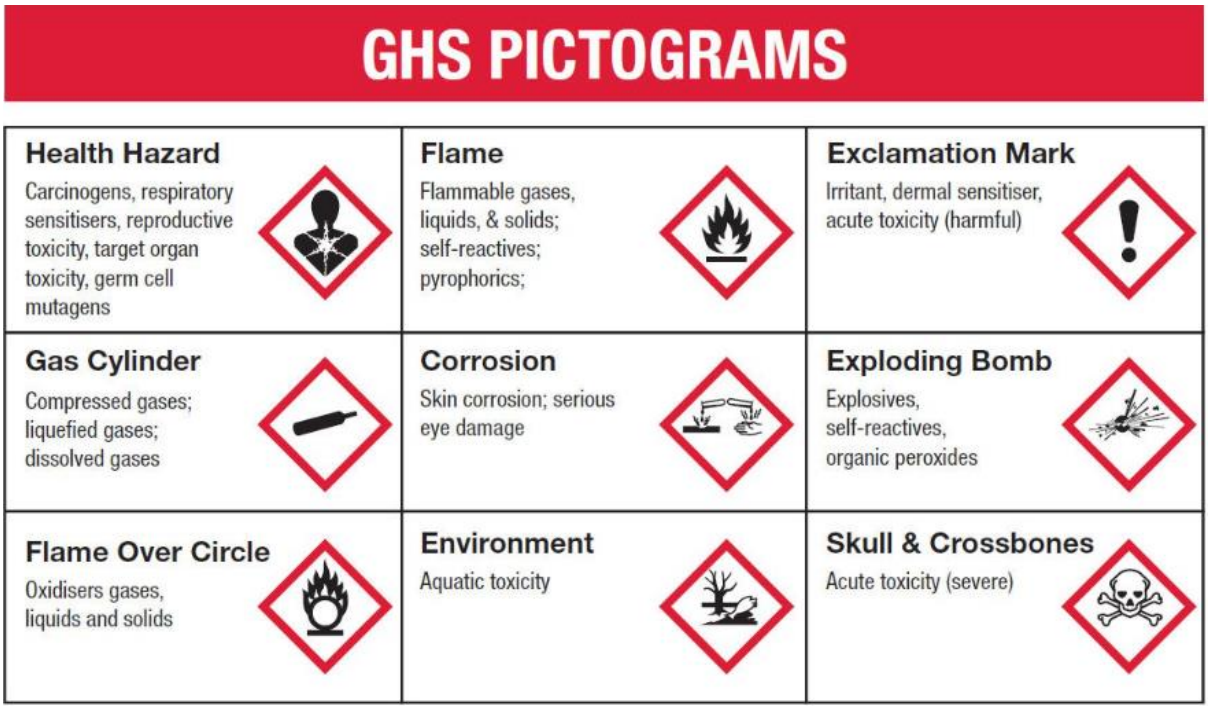
If there is not an existing risk assessment in place e.g. for a new research project or item of equipment, then you must carry out a new risk assessment. A hard copy should be stored in the work area and an electronic copy sent to the Departmental Safety Officer. Template forms are available from the University Safety Office website or the DSO.

All assessments must be reviewed at least annually and authorised by the Research Group Head or Supervisor. If the assessment changes this must be communicated to those individuals who may be affected. Students and employees must record that they have read (or carried out) the necessary assessments by completing a Personal Safety Record Form. This confirms that they understand and will follow, the procedures contained within the assessments.

Chemical Safety

Most chemical exposures are potentially harmful to your health and may jeopardise your safety. The effects of chemical exposures may be immediate (e.g. an acid burn) or long term (e.g. occupational cancer), and may result in life-threatening outcomes. Controlling your exposure to hazardous substances is paramount.

The main bodies of legislation associated with chemicals are the Control of Substances Hazardous to Health Regulations (COSHH), which requires us to assess the health risks arising from exposure to hazardous substances and to prevent or control exposure; and The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR). DSEAR applies to flammable/explodable substances, oxidisers, gases under pressure, substances corrosive to metals and anything else that poses a similar risk.



Training

Anyone working in a laboratory must attend the University of Cambridge Chemical Safety training course. This is bookable through the training website: https://www.training.cam.ac.uk/

Laboratory workers must read the University of Cambridge Chemical Safety Guidance on Safe Chemical Practice (SCP) for the prevention and control of exposure to laboratory chemicals, available from the Safety Office website:
https://www.safety.admin.cam.ac.uk/system/files/hsd019c.pdf

COSHH & DSEAR risk assessments

Risk assessments for all substances that may be hazardous to health (e.g. chemicals, biological substances, cleaning solutions, adhesives etc.) must be carried out. These assessments will include principal hazard data and information on how to work safely with and dispose of each substance.

COSHH & DSEAR risk assessments for all procedures must be carried out BEFORE work begins. All necessary control measures identified through the risk assessment process MUST be implemented, particularly the wearing of lab coats, gloves and eye protection.

Detailed guidance is available on the Safety Office website:
https://www.safety.admin.cam.ac.uk/subjects/chemicals/coshh
https://www.safety.admin.cam.ac.uk/subjects/chemicals/dangerous-substances-explosive-atmospheres

Template forms are available from the Safety Office website or the Departmental Safety Officer.

Material Safety Data Sheets (MSDS)

Safety Data Sheets, also known as Material Safety Data Sheets (MSDS) are a key source of information for each product. MSDS provide details of known hazards associated with the chemicals and often include first aid instructions and suggestions for disposal. They are an important source of information when carrying out COSHH assessments and are available from suppliers' websites if not shipped with the product.

Always check both the COSHH assessment and the data available before using any substance for the first time.

Carcinogens, Mutagens and Substances Toxic to Reproduction

If, as a result of COSHH assessment, workers or students are identified as working with carcinogens, mutagens and substances toxic to reproduction in Categories 1 (carcinogenic to humans) and 2 (probably carcinogenic to humans), a health record form must be completed and returned to the Departmental Safety Officer annually (at the end of September).

Detailed guidance is available from the Safety Office:
https://www.safety.admin.cam.ac.uk/subjects/chemicals/carcinogens-mutagens-and-reproductive-toxins

Poisons

Any poisons that fall under Schedule 1 are subject to special restrictions. They must be kept in a locked cabinet, specific for the purpose, in the laboratory. A designated responsible person should hold the key and a log-book must be kept to record when a poison is used, how much and by whom. The name of the key holder should be notified to the Departmental Safety Officer.

Pressurised Gas and Cryogens

Users of gas cylinders or cryogens must ensure COSHH/DSEAR risk assessments are in place to cover their work. Suitable PPE, including eye protection, must be worn.

Those working with compressed gas cylinders or dispensing liquid nitrogen should attend the University of Cambridge training course entitled ‘Pressurised Gas and Cryogens’.

Individuals requiring access to the cryostore will receive prior training from the Building Manager. The cryostore is fitted with an oxygen depletion monitoring and alarm system. Users should leave the room immediately if the alarm is activated and must not re-enter until permitted to do so by the Building Manager.

Chemical Inventory System

All laboratories in the University are required to maintain an inventory of their chemicals and storage locations in the ChemInventory system. All chemicals must be included with the exception of simple easily available commercial cleaning products ('household cleaners').

Each research group should have at least one inventory administrator who can grant access to everyone in their group. Administrator access can be arranged through the Departmental Safety Officer.

Users can log in at: https://access.cheminventory.net/

Chemical Disposal

Hazardous chemicals must not be disposed of down the drain. Chemicals for disposal should be collected in either a suitable inert bottle or be in their original container. All bottles must be clearly labelled with your name, the date, the contents of the container and the appropriate GHS hazard pictogram(s). Before mixing waste chemicals you must ensure it is safe to do so e.g. by checking published information on chemical compatibility.

Containers for disposal should be placed in a designated fume hood or collection area and marked for disposal as instructed by the Building Manager. A chemical waste disposal request form must be completed and emailed to the Building Manager. Chemicals will not be collected for disposal if they are not properly labelled.

Biological Safety

Biological and Genetic Modification risk assessments

Anyone wishing to work with potentially pathogenic organisms, or samples that may contain them, or who is working with micro-organisms or viruses for the first time, must speak to the Biological Safety Officer.

Each research project must be assessed with respect to the use of:

1. Genetically Manipulated Micro-organisms (GMMs or GMOs);
2. Genetically Manipulated Plants or Animals (GMOs);
3. Biological Agents: 'any micro-organism, cell culture or human endoparasite, including any which have been genetically modified, which may cause any infection, allergy, toxicity or otherwise create a hazard to human health' (COSHH 1994);
4. Plant Pathogens;
5. Animals.

Before commencing a project involving ANY biological material, a biological risk assessment must be carried out under the COSHH regulations and submitted to the Biological Safety Committee for approval.

If the work involves genetic modification or genetically modified organisms, it must be assessed under the Genetically Modified Organisms (Contained Use) Regulations, 2000 and a GMO risk assessment must be prepared. In such cases, there is no need for a separate COSHH assessment; it is subsumed into the GMO assessment. This assessment must take account of risks to human health and risks to animals, plants and the environment. This is a legal requirement. Template forms are available from the University Safety Office: https://www.safety.admin.cam.ac.uk/subjects/biologicals/gm-gmo-gmm-gm-plants

No biological work may commence without the approval of the Biological Safety Committee.

The HSE must be notified of any Class 2 GM projects (i.e. GM work that requires Containment Level 2) before work commences. The BSO will help arrange this.

Each group must review their biological and GM risk assessments at least annually.

Advisory Committee on Dangerous Pathogens (ACDP) Hazard Groups

Biological agents are classified into four Hazard Groups based on the following criteria:-

- Is the agent pathogenic for humans?
- Is it a hazard to employees?
- Is it transmissible to the community?
- Is effective prophylaxis or treatment available?

Hazard Group 1: A biological agent unlikely to cause human disease.

Hazard Group 2: A biological agent that can cause human disease and may be a hazard to employees; it is unlikely to spread to the community and there is usually effective prophylaxis or treatment available.

Hazard Group 3: Can cause severe human disease and may be a serious hazard to employees; it may spread to the community, but there is usually effective prophylaxis or treatment available.

Hazard Group 4 biological agents are **not permitted** in the Institute. They cause severe human disease and are a serious hazard to employees, are likely to spread to the community and there is usually no effective prophylaxis or treatment available.

The guidance list of biological agents with their hazard groups can be found in The SACGM Compendium of Guidance (HSE, Jan 07, www.hse.gov.uk/biosafety/gmo/acgm/acgmcomp). This should be consulted whenever risk assessments are being undertaken.

The Compendium also provides guidance on the measures that must be taken to work safely with the agents in each hazard group and to 'contain' these agents. These are known as 'Containment Levels'. In general, agents falling into Hazard Group 1 must be handled at Containment Level 1, those falling into Hazard Group 2 must be handled at Containment Level 2 etc.

Working with Human Tissue

Consent and licencing

The Human Tissue Act 2004 regulates the removal, use and storage of relevant human material for a number of uses, called "Scheduled Purposes", which includes research projects. The Act is upheld and regulated by the Human Tissue Authority to ensure that human tissue is used safely and ethically, and with proper consent.

The Human Tissue Act makes consent the fundamental principle underpinning the lawful storage and use of body parts, organs and tissue from the living or the deceased. Further information can be found on the safety website and on the Human Tissue Authority webpage:

https://www.safety.admin.cam.ac.uk/subjects/biologicals/human-tissue-act

https://www.hta.gov.uk/sites/default/files/Code%20E.pdf

You must obtain informed consent for the removal, use and storage of relevant human material for your research, from the living and the deceased.

Relevant material is that which consists of, or includes, human tissue or cells (apart from those that have divided in cell culture). It also includes slides and tissue blocks. The Act states that relevant human material does not include gametes, embryos outside body, hair and nails from a living person. It does include hair and nails from a deceased person. The full list of relevant materials can be found on the HTA website:

https://www.hta.gov.uk/policies/list-materials-considered-be-'relevant-material'-under-human-tissue-act-2004

Organisations that store and use human tissue for the purposes of research must have a licence to do so.

No sample shall be received or stored in the Institute without compliance with the Human Tissue Act.

Exemptions from the need for consent

Certain samples are legally exempt from the requirement for consent:

1) Research samples if the following conditions are all met:
    a. The sample is from a living person;
    b. The sample is anonymous;
    c. The research project has been approved by an NHS Research Ethics Committee.
2) Existing holdings collected before 1st September 2006 (a licence is still required).
3) Imported tissues, although it is still best practice to ensure consent is in place (a licence is still required).

Exemptions from the need for the premises to be licenced.

A premises licence is not required to store or use human tissue in the following situations:

1) The research project has NHS Research Ethics Committee approval, typically granted for a period of five years.
2) The samples will be processed to render them acellular within a maximum period of seven days.
3) The samples are pending transfer to a licenced premises and will be transferred within seven days.
4) It has been 100 years since the donor's death.

Training

Anyone working with human tissue must undertake training prior to work commencing. The University Safety Office course entitled 'Working within the Human Tissue Act'. Staff unable to attend this course must complete online training.

Training records must be kept by the individual and copies of the training certificate sent to the Institute Person Designated and the Departmental Safety Officer.

Record-keeping

Accurate and up-to-date records must be kept of the location and use of all human tissue samples. The date and reason for disposal must also be recorded.

Specific biological risk assessments and safe operating procedures to cover the proposed work must be in place prior to materials arriving in the Institute.

Radiation Safety

Ionising Radiation – Unsealed Sources

The Institute is committed to ensuring that radiation doses to employees and others, resulting from the use of ionising radiations in specified work, are restricted to *As Low As Reasonably Practicable* (ALARP). The Institute is also committed to ensuring the principle of *Best Available Technique* (BAT) is observed in order to minimise the disposal of radioactive waste to the environment and to minimise radiation exposures of the public. The process must ensure minimisation of activity in any waste generated and minimisation of the volume of any waste transferred to other locations.

Prior Risk Assessments for any work involving radioactive substances must be carried out under the terms of the Ionising Radiation Regulations 1999.

Further information is available from the University Safety Office:
http://www.admin.cam.ac.uk/cam-only/offices/safety/radiation/ir/guidance.shtml

All users of radioactivity must register with the Radiation Protection Supervisor BEFORE beginning work. This ensures that training needs are identified and the necessary personal monitoring badges are issued. They must also read, and agree to comply with, the Institute's Local Rules.

Users must read the University's 'Working Safely with Unsealed Radioactive Sources' guidance, available from the Safety Office website:
http://www.safety.admin.cam.ac.uk/publications/hsd010r-working-safely-unsealed-radioactive-sources

Copies of the Local Rules will be given to workers when they register for radioactivity work.

Ionising Radiation – X-ray Irradiator

All potential users must register with the RPS responsible for the Irradiator and receive documented training in advance of any planned work. Access to the facility is restricted and controlled. Copies of the Local Rules will be given to workers when they register for radioactivity work and risk assessments must be in place.

Non-ionising Radiation

Anybody intending to carry out work involving lasers of Class 3 or above should consult the Institute Laser Safety Officer (LSO) prior to starting work. Suitable training must be provided and documented. Refresher training will be available if deemed necessary by the LSO and upon request from users. A risk assessment must be completed before work begins

All equipment containing lasers of Class 3 or above must be registered with the Laser Safety Officer so that he/she can complete an annual return for the University Safety Office. If any of the equipment changes location or is removed from the Institute, the LSO must be informed immediately. Local Rules and training procedures will be required for all such equipment and it is the responsibility of the principal user/Facility Manager to create and update these, in conjunction with the LSO.

If the laser beam is to be exposed during maintenance work the Laser Safety Officer needs to be informed before work starts to ensure adequate safety measures are in place. During maintenance, safety local rules will be put in place (e.g. a warning light or notice) to restrict access to the area.

Local Rules for lasers of Class 3 or above will be displayed in the appropriate areas and subject to regular review by the LSO.

Display Screen Equipment

Visual display screens are the subject of the Health and Safety (Display Screen Equipment) Regulations 1992, amended in 2002.

Working with computer screens and other types of display screen equipment (DSE) can cause both physical and mental fatigue. Some users may get aches and pains in their back, shoulders, neck, arms, wrists, hands or fingers. These upper limb disorders (ULDs) are often referred to as a repetitive strain injury (RSI), or more generally a musculo-skeletal disorder (MSD). Temporary visual fatigue, with symptoms such as blurred vision, sore eyes and headaches, can also occur. There is, however, no evidence that DSE can cause disease or permanent damage to the eyes.

The risk of developing these health problems is generally low but increases if good practice is not followed when setting-up and using your computer. All users should follow University guidance in setting up their workstation. Users should also plan their work to allow for regular breaks when working with DSE. In general, aim for a 5-10 minute break after 50-60 minutes continuous computer work.

Users must read the University Policy on Display Screen Equipment, available from the University Safety Office: https://www.safety.admin.cam.ac.uk/system/files/hsd005p.pdf

Risk assessment

All DSE users must complete a DSE risk assessment and forward a copy to their Manager and the Departmental Safety Officer. A self-assessment checklist is available for this purpose: https://www.oh.admin.cam.ac.uk/oh-forms/display-screen-equipment-self-assessment-checklist

DSE risk assessments must be reviewed at least every two years, but must be revised if changes are made to the workstation.

Personal Safety Training Record

Please use this document during your time in the Institute to record that you have read or completed all safety documentation, safe-operating procedures (SOPs) or risk assessments relevant to your work. Also record all training you have received. This document will assist you and your supervisor/Head of Group to monitor your training and so ensure that all staff and students have received the necessary instruction and training to enable them to work safely.

Employee/Student Name	**Group Leader**	**Date Work Commenced**

Technique/ Area	***Received and read documentation, SOP, or risk assessment (signature)***	***Received relevant training (signature)***	**Date and nature of training**	**Supervisor's signature**
General Issues	**Where not applicable enter N/A**	**Where not applicable enter N/A**	**e.g. University course/personal supervision/other**	
Institute Safety Policy and Safety Manual			Safety Manual Safety Induction Checklist, completed and send back to Safety Office Local induction	
First Aid arrangements			Safety Manual Jeffrey Cheah Biomedical Centre induction talk	
Reporting accidents and incidents			Safety Manual Jeffrey Cheah Biomedical Centre induction talk	
Fire and security procedures			Jeffrey Cheah Biomedical Centre induction talk	
Expectant mother policy			Notify HR as soon as you are confirmed pregnant. Refer to http://www.hr.admin.cam.ac.uk/policies-procedures/maternity-policy Form Chris/60 – Maternity leave application form. Form Chris/61 – Maternity leave return form. University risk assessment for expectant and nursing mothers http://www.safety.admin.cam.ac.uk/publications/hsd104m-risk-assessment-expectant-and-nursing-mothers	
Lone and out of hours working			Safety Manual Jeffrey Cheah Biomedical Centre induction talk	

Technique/ Area	*Received and read documentation, SOP, or risk assessment (signature)*	*Received relevant training (signature)*	Date and nature of training	Supervisor's signature
Use of ladders and Kick stools.			Risk assessment University training course on use of ladders	
Use of computers, display screen equipment and posture			DSE risk assessment carried out Safety Manual	
Manual handling			https://www.safety.admin.cam.ac.uk/subjects/workplace/manual-handling	
Laboratory Safety				
Waste disposal routes			COSHH risk assessments Jeffrey Cheah Biomedical Centre induction talk Chemical waste disposal forms	
Selection and use of PPE			COSHH risk assessments University Chemical Safety training course	
Handling and spillages of chemicals			University Chemical Safety training course COSHH risk assessments	
Use of fume cupboards			University guidance document Safe Chemical Practice (SCP) for the prevention and control of exposure to laboratory chemicals. https://www.safety.admin.cam.ac.uk/system/files/hsd019c.pdf	
Carcinogens			Safety Manual Working Safely with Carcinogens, mutagens and substances toxic to reproduction, code of practice and guidance by the Safety Office COSHH risk assessments	
Toxins, poisons and controlled drugs			Safety Manual University Chemical Safety training course COSHH risk assessments	
Use of microbiological safety cabinets			Tissue Culture Induction University training course 'Using Containment Facilities and Microbiological Safety Cabinets'	

Technique/ Area	***Received and read documentation, SOP, or risk assessment (signature)***	***Received relevant training (signature)***	**Date and nature of training**	**Supervisor's signature**
Dangerous pathogens			Safety Manual Biological risk assessments Containment Level 2 Tissue Culture Induction	
Genetically modified (GM) organisms			Safety Manual GM risk assessments	
Human Tissue			'Working within the Human Tissue Act' training Risk assessments	
Use of centrifuges			Risk assessment Personal Supervision	
Liquid nitrogen and other cryogens			Jeffrey Cheah Biomedical Centre Cryostore training COSHH and risk assessments	
Compressed gases and gas cylinders			Safety Manual University training course 'Pressurised Gas and Cryogens'.	
Vacuum and pressure equipment			Risk assessments	
Radiation	**See Radiation Protection Supervisor for Local Rules**		**N/A, For information only, see separate headings below**	
Radioisotopes			Centre local rules New User's Course Radiation talk by senior RPS	
Ultraviolet sources			Risk assessment Personal Supervision	
Lasers			Local rules Risk assessments University 'Laser Safety for Class 3B and 4 laser users' training course	
Other Techniques or training (please keep updated):				

Technique/ Area	***Received and read documentation, SOP, or risk assessment (signature)***	***Received relevant training (signature)***	**Date and nature of training**	**Supervisor's signature**

Please keep this form for your records, add to it as required and submit a photocopy to your Group Leader/Academic Supervisor at your annual appraisal whilst you continue working in the Institute. When you leave, please pass a copy of the form to the Departmental Safety Officer.