



University
of Glasgow

School of Molecular
Biosciences

Health and Safety Handbook

Last Reviewed	Oct 2023
Next Review	Oct 2024
Owner	School of Molecular Biosciences – Health & Safety Committee
Drafted by	SMB Convenor of Health and Safety & Admin Team

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1.0 Health and Safety Committee – Key Contacts

The Convenor of Health & Safety:

Name	Contact Information
Craig Carr	Room 250 Level 2, Bower Building 0141 330 5081 Craig.Carr@glasgow.ac.uk

Deputy Convenors of Health & Safety:

Name	Contact Information
June Southall	Room B4-13, Level 2, Joseph Black Building 0141 330 6447 June.Southall@glasgow.ac.uk
Laura Jenkins	Room 250 Level 4, Advance Research Centre 0141 330 8494 Laura.Jenkins@glasgow.ac.uk

Health & Safety Committee Members:

Name	Title
Prof Helen Walden	Committee Chair (Head of School)
Craig Carr	Convenor
June Southall	Deputy Convenor
Laura Jenkins	Deputy Convenor
Nikki White	Head of Professional Services
Naomi Donald	Safety Co-ordinator (Research Technician) Bower
Bethany Fleming	Safety Co-ordinator (Research Technician) Davidson
Dr Monica Tsimbouri	Safety Co-ordinator (Research Fellow) ARC
Carol-Anne Smith	Technical Manager ARC
Stuart Sullivan	Research Associate
Colin Molloy	Research Technician
Dr Adam Dobson	UKRI Future Leadership Fellow
Dr Rucha Karnik	Senior Royal Society Fellow
Dr Sarah Cumming	Research Associate
Sam Holt	Research Technician

Health & Safety Co-coordinators:

Building	Contact
Advanced Research Centre (ARC)	Laura Jenkins 0141 330 8494 Laura.Jenkins@glasgow.ac.uk Dr Monica Tsimbouri Monica.Tsimbouri@glasgow.ac.uk
Davidson Building	Bethany Fleming 0141 330 6453 Bethany.Fleming@glasgow.ac.uk
Bower Building	Craig Carr 0141 330 5081 Craig.Carr@glasgow.ac.uk Naomi Donald 0141 330 2081 Naomi.Donald@glasgow.ac.uk
Joseph Black Building	June Southall 0141 330 6447 June.Southall@glasgow.ac.uk

SMB Safety Advisors:

Biological Safety Advisor	Contact Information
Craig Carr	Room 250 Level 2, Bower Building 0141 330 5081 Craig.Carr@glasgow.ac.uk
GM Safety Advisor	Contact Information
Craig Carr	0141 330 5081 Craig.Carr@glasgow.ac.uk
Radiation Safety Officers	Contact Information

Laura Jenkins (ARC)	0141 330 8494 Laura.Jenkins@glasgow.ac.uk
Donald Campbell (Davidson)	0141 330 6601 Donald.Campbell@glasgow.ac.uk
Sarah Cumming (Deputy Davidson)	0141 330 6229 Sarah.Cumming@glasgow.ac.uk
Chemical Safety Advisor	Contact Information
Craig Carr	Room 250 Level 2, Bower Building 0141 330 5081 Craig.Carr@glasgow.ac.uk
GM-BSO Safety Officer	Contact Information
Joel Milner	Room 322 Level 3, Bower Building 0141 330 5836. Joel.Milner@glasgow.ac.uk

Area Fire & Deputy Area Fire Officers:

Building	Contact
Advanced Research Centre (ARC)	AFO: Steven Roles (Facilities Zone 1 Manager) 07977 727190 Steven.Roles@glasgow.ac.uk Deputy AFO's – Carol Anne Smith 07977 670 259 Carol-Anne.Smith@glasgow.ac.uk
Davidson Building	John McDougall Ext 8447, 0414 330 8447 John.McDougall@glasgow.ac.uk
Wolfson Link Building	
Sir James Black Building	

Bower Building	<p>AFO: Craig Carr Ext 5081, 0141 330 5081 Craig.Carr@glasgow.ac.uk</p> <p>Deputy AFO: Naomi Donald 0141 330 2081 Naomi.Donald@glasgow.ac.uk</p>
Joseph Black Building	<p>June Southall Ext 6448, 0141 330 6447 June.Southall@glasgow.ac.uk</p>

First Aid Trained Staff:

Building	Contact
Advanced Research Centre (ARC) Level 4	<p>Laura Jenkins – Ext 8494 Bethany Dibnah – Ext 8494 Colin Malloy – Ext 8494 Margaret Nilson – Ext 8494</p>
Davidson Building	<p>Level 1: Paul Graham – Ext 6151</p> <p>Level 2: Esha Nitnavare – Ext 6454 Julia Dunlop – Ext 6235 Beth Fleming – Ext 6453</p> <p>Level 3: Anthony Dornan – Ext 6811</p> <p>Level 4: Joanna Wilson – Ext 5108</p>
Bower Building	<p>Level 2: Naomi Donald – Ext 2381 Amparo Ruiz Prado – Ext 5081</p> <p>Level 3: Louise Henderson – Ext 0497</p> <p>Level 5: Arlene McQue – Ext 5116</p>
Joseph Black Building	<p>June Southall – Ext 6447</p>
Wolfson Link Building	

Sir James Black Building	
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Note: First Aid Rooms and Defibrillator locations can be found on School First Aid signage within each building

The University security service holds emergency out-of-normal working hours, key holder information at the main Gilmorehill gatehouse, to assist with any issues that arise, details of the individuals & buildings are below:

In the event of an incident or emergency contact the
 Main Gilmorehill gatehouse on 0141-330-4282 or in an emergency 1014-330-4444
 Or
 Garscube gatehouse on 0141-330-2222

Out of Hours Key Holders		Location
Craig Carr, Prof Mike Blatt Naomi Donald		Bower Building
John McDougall, Paul Graham		Davidson Building
		Wolfson Link Building
		Sir James Black Building
Steven Roles (Facilities Zone 1 Manager) 07977 727190 Steven.Roles@glasgow.ac.uk Carol-Anne Smith		Advanced Research Centre (ARC)

2.0 Safety Policy Statement

The Health and Safety at Work Act 1974, along with other regulations and approved Codes of Practice, secure the health, safety, and wellbeing of not only employees of the School of Molecular Biosciences and the wider University community, but also students and visitors and other Schools furth of Glasgow. It is recognised that this School is located across several buildings including: the Davidson, Sir James Black, Joseph Black, Bower, and the Advanced Research Centre. This policy and subsequent health, safety and wellbeing systems have been put in place to take account of the geography and other occupants of these places of work.

The School of Molecular Biosciences, in conjunction with the University's Health, Safety and Wellbeing policy (copies of which are available on the University Web Site), is committed to the provision of a safe and healthy workplace and environment. In addition to meeting statutory requirements this School will strive to continually improve on standards of health, safety, and wellbeing and as such this document enhances the University's policy by describing the organisational structure in place for safety in the School and indicating potential hazards and the precautions required to prevent accidents and ill health.

The successful management of health and safety at work requires active participation of every member of staff within the School. Although the Head of School has delegated responsibility through the Head of College and ultimately the University Court for the establishment of suitable and sufficient arrangements for health, safety, and wellbeing for everyone working or visiting within School property, all staff, students, and registered visitors have a duty to ensure that they behave in a manner that will not affect the welfare of colleagues.

Every level of management within the School is accountable to their line manager and at the same time responsible for the health, safety, and wellbeing of those reporting to them. Supervisors should lead, motivate, and encourage their staff to report on hazards and to discuss all matters relating to health and safety.

The Safety Policy is made, and safety performance monitored, by the Head of School under the guidance and advice of the School Safety Committee comprising staff representatives from various locations, plus interested and associated groups.

The School recognises that safety requirements enacted by law set only a minimum standard. It is also recognised that safety standards are dynamic in nature and the School underlines the importance of its commitment by constantly reviewing its own safety standards. As far as conditions and resources permit, the School is committed to continual and progressive improvement in standards of safety.

All staff, students and registered visitors are required to observe the health and safety rules and standards and adhere to the School Health and Safety Policy Statement. Deliberate deviation from the established rules and standards may result in disciplinary action.

This policy statement will be reviewed by the Safety Committee of the School of Molecular Biosciences at least annually.

To implement this policy, the School of Molecular Biosciences is committed to maintaining and enhancing the Health, Safety and Wellbeing of all staff, students, and registered visitors. This will be achieved by: -

1. Maintaining an appropriate framework for the consultation on effective measures for continual development and the promotion of health, safety, and wellbeing.
2. Continuing to develop and implement procedures and codes of safe working practice.

3. Ensuring effective management of risks by assessment, implementation of systems and review.
4. Providing training in safe working methods with the opportunity for all to participate.
5. Forming a health, safety, and wellbeing committee with participation at all levels.
6. Developing School guidelines to ensure adherence to statutory regulations and University of Glasgow policies.

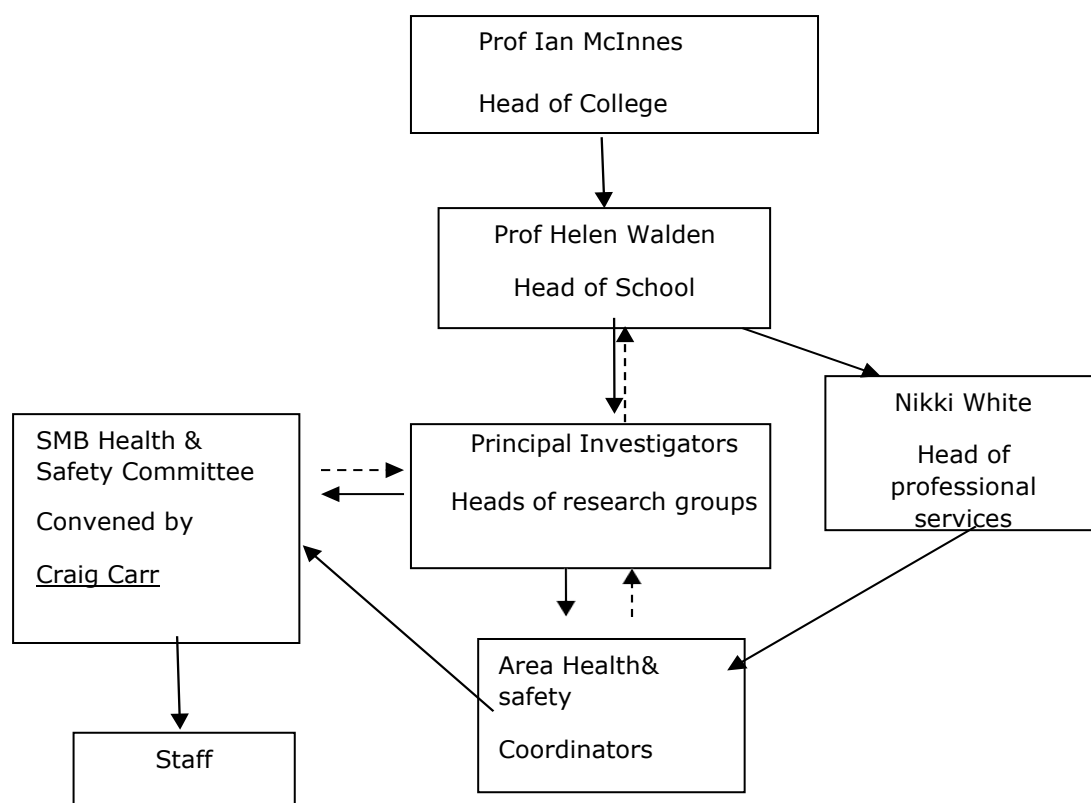
Should any member of staff or student have any suggestion or comments regarding the above Policy Statement please contact Craig Carr (Convenor of the Health and Safety Committee).

See website for members of the Safety Committee of the School of Molecular Biosciences.

To support the implementation of the above policy, the following guidelines are available on the School's safety web page:

- Accident/dangerous occurrence reporting
- Biology safety
- COSHH, risk assessment and chemical safety
- Dealing with sharps
- E-induction
- Electrical safety
- First aid
- Handling liquid nitrogen
- General safety regulations and information
- GM safety
- New/expectant mother risk assessment
- Radioisotopes local rules
- Use of equipment
- Safe use of Ultraviolet light
- Use of pressurised gases
- Waste
- Working with human material
- General Laboratory Risk Assessment
- Occupational Health

Hierarchy of the Management of Safety in the School of Molecular Biosciences



Safety issues should be reported to the Convenor, Craig Carr, or in his absence the Deputy Safety convenors / Area Safety Co-Ordinator's. However, Principal Investigators have a responsibility to ensure that all staff and students working with them are aware of their safety responsibilities within any laboratory in which they work. Also, to ensure that they do not put themselves, other colleagues and other authorized individuals working in the vicinity at risk.

School Safety Induction

To be signed on completion by the **SUPERVISOR**.

Please provide your new starter with access to the SEPS website, School Safety Handbook, COSHH assessments and draw their attention specifically to the following points (where applicable).

There are also building or area specific inductions in place for staff & students which will complement the below list:

Topic	Tick
Starting in the Lab (obtaining a locker key, lab coat, bench space), tour of facilities	
Importance of wearing Personal Protective Equipment (PPE) in the lab & Personal responsibility for safe working practices. Emphasize personal responsibility for safe working practices	
COSHH forms, Biological & Chemical risk assessments, location in the lab and signing off	
Sources of Safety advice and information e.g., SoMB Health & Safety webpages (https://www.gla.ac.uk/schools/molecularbiosciences/studentstaff/healthsafety/) & Safety and Environmental Protection Service (SEPS) website. (https://www.gla.ac.uk/myglasgow/seps/)	
SEPS E-information: https://www.gla.ac.uk/myglasgow/seps/training/	
Other sources of safety advice and information, i.e., laboratory safety noticeboard	
Fire safety, Fire Alarm Evacuation Procedure, Fire Alarm Test	
Location of Fire Extinguishers, Fire Blankets & Fire alarm activation points	
Emergency Procedures	
List of First Aiders in the Building, location of First Aid boxes	
Eye Wash Stations, Hand Wash Sinks & Showers	
Electric safety - Electric Shock Hazards in the laboratory	
Reporting of accident and dangerous occurrence Form	
Reporting broken equipment & Building defects	
Building Security, Access Times & Lone Working Policy Safe Zone App (https://www.gla.ac.uk/myglasgow/securityandoperationalsupport/)	
Biological Safety & Genetically modification safety policies	
Chemical Storage and Hazard Symbols, Safety Symbols, and other hazardous chemicals	
Chemical waste classification, storage, and disposal	
Chemical Spillages	
Liquid Nitrogen Handling	
Sustainability, sharing resources, recycling points in the lab/building	
Disposal procedures: waste streams for the disposal of Chemical, Biological or Electrical waste & SEPS waste policy	
Good microbiological practice	
Handling of pathogens and potentially infective tissues	

Handling human material and hepatitis B immunisation	
Safe use and disposal of sharps	
General Laboratory risk assessment	
Occupational health	

Signed:	Dated:
Print name:	Supervisor (print):

The induction should be completed by all new members of staff and students. The induction will be carried out by a competent person for Health and safety purposes. **Competency** is defined as the acquisition of knowledge, skills, and ability at a level of expertise suitable to perform certain work. Principle Investigators/ Supervisors must be satisfied with the individual's competence and their understanding of the local safety arrangements. A copy of the form once complete should be returned to the School Administration office and a copy retained in the Laboratory.

HEALTH AND SAFETY POLICY

I have received, read, and understood a copy of the above safety policy.

Note: This safety policy supersedes all previous School regulations regarding Health and Safety.

Signed:	Dated:
Print Name:	Building location:
Supervisor:	Nature of role:
Start date:	

Please return the signed statement to the Supervisor and store in their laboratory or Office.

SMB July 2023

Safety Instruction Notes for New Lab Members

1. Starting in the lab. How to obtain:

- Locker key (where applicable)
- Lab coat – Order from MVLS Stores or can take a clean spare coat from laboratory.
- Bench/Fridge/Freezer Space – PI to allocate.
- Computer/Write-up space – PI to allocate.

2. Lab Tour

All rooms & equipment associated with the laboratory & discuss building facilities. (e.g., Plant Environmental Growth chambers (walk-in or reach-in), Cold-rooms, Ultra-low temperature freezers, washroom, laundering laboratory coats). Laboratory consumable ordering procedures etc.

3. Emphasise personal responsibility for safe working practices.

It is your responsibility to wear Personal protection equipment (PPE). Obtain instructions in CoSHH risk assessments/ the safe use of equipment/chemicals/SOP's (standard operating procedures) **PRIOR** to starting work to keep both yourself and others safe.

***No eating /drinking/vaping/smoking allowed in the lab*.**

***Do not wear disposable gloves when going through doors! ***

***If you don't know how to use equipment, please ASK! ***

4. Importance of wearing Personal Protective Equipment (PPE) in the laboratory

Minimally wear a Lab coat. As required wear gloves, eye protection, full face visor, covered shoes depending on the work that you are carrying out for your own protection and that of others.

5. COSHH-Risk Assessment forms, Biological & Chemical

The forms are located in each laboratory – New lab members must read and sign the forms relevant to their work **PRIOR** to starting work.

6. Complete the E-induction form on University website.

<https://www.gla.ac.uk/myglasgow/health/>

7. Other sources of Safety Advice and Information

- School of Molecular Bioscience Health & Safety webpages
- <https://www.gla.ac.uk/schools/molecularbiosciences/studentstaff/healthsafety/Safety> and Environmental Protection Service, GU (SEPS) website (<https://www.gla.ac.uk/myglasgow/seps/>)

8. Waste disposal routes in the lab i.e.

1. General Waste
2. Chemical (both non-hazardous and hazardous),
3. Biological (liquid and solid),
4. Glass
5. Sharps (i.e., needles, lancets, scalpel blades)
6. Recycling (e.g., paper, batteries, and printer cartridges)

9. Fire Alarm Testing (Frequency: Weekly)

The alarm is tested weekly for each area. The alarm comprises of a short, loud, ringing burst which should cease after around 10-15 seconds. **If the alarm does not stop, assume that it's a real fire alarm activation and evacuate the building via the nearest exit.**

10. Fire Alarm Evacuation Procedure

When the fire alarm is activated, please stop what you are doing immediately and LEAVE the building by the nearest exit, following the GREEN Fire Exit signs. DO NOT USE THE LIFT! Familiarize yourself with the assembly point or congregation area for each building.

****Do NOT re-enter the building until you are told that it is safe to do so by the Area Fire Officer, Emergency services or security services****

11. Fire Extinguishers & Blankets

Familiarize yourself with the location of the Fire extinguishers, blankets & emergency fire activation points with the lab / building.

Remember the Fire Triangle – Oxygen, Heat and Fuel. A fire can be prevented by removing one of the 3 elements.



Fire Action Plan

1. In the event of a fire, raise the alarm by activating the nearest Fire Alarm Call point.
2. Evacuate the building by the nearest exit and go to the **Assembly Point for your building.**
3. Close doors where possible as you leave.
4. Don't use LIFT! Don't stop to collect personal belongings!
5. Don't re-enter the building until you are told that it is safe to do so.
6. **Contact GU Security on Ext 4444** to let them know the circumstances of the fire alarm activation.
7. Don't attempt to tackle a fire if it puts you at risk. Evacuate and let the Fire Brigade handle it.

12. Emergency Procedure

In the event of an emergency, use any University telephone in the lab/offices/computer areas to:

- a) Contact University Security by dialing **4444 (Emergency Number only).**
- b) If Security are unavailable, contact Police, Fire & Ambulance DIRECTLY by dialing **9999.**

Give the following information:

- Your Name
- Exact Location and Nature of the Emergency
- Any Hazards at the Scene
- Number of Casualties (if any). (N.B. All calls to the emergency services are recorded).

13.

14. List of First Aiders in the Building, location of First Aid boxes

The lists of current First Aiders are located in various points throughout the buildings: corridors, above the hand wash sinks in each lab.

The First Aid boxes are located in each laboratory. For replacement First Aid supplies please contact the safety coordinator for your area/ building.

15. Eye Wash Stations, Hand Wash Sinks & Emergency Showers

The eye wash stations are located beside the 2-hand wash sinks in the lab.

There are 2 hand wash sinks in most of the school's laboratories located beside the entrances/exits in the lab and they are stocked with soap and paper towels.

The emergency shower stations are located beside the 2-hand wash sinks in the lab.

16. Fire Safety and Hazards

<https://www.gla.ac.uk/myglasgow/seps/firesafety/>

17. Electric Shock Hazards in the Laboratory

In the laboratory, workers may be exposed to electrical hazards including electric shock, fires, and explosions. Potential exposures to electrical hazards can result from faulty electrical equipment / instruments / wiring, or unsafe work practices.

To avoid such hazards:

- Always follow the manufacturer's instructions for using electrical equipment.
- Do not use electrical equipment to perform a task for which it is not designed.
- Before turning equipment on, check that all power cords are in good condition.
- If you see a person being electrocuted, **DO NOT TOUCH THEM!** The electricity can go through you too! If possible, **turn off the power** (pull the plug or trip the circuit breaker), **or use an item made of non-conductive material (e.g., wooden brush handle) to pry the person away from the contact.**
- **Call the emergency services immediately, 9999 on any University telephone (Tel No on mobile is 999).**
- **Carry out First Aid by checking ABC (Airway, Breathing and Circulation). Perform CPR if needed until the ambulance service arrives and takes over.**
-

18. Reporting of Accident or Dangerous Occurrence in the Laboratory

All accidents or dangerous occurrences must be reported to avoid recurrences and accidents in future. If you are involved in an accident or dangerous occurrence you must first report it to your PI and the local Safety coordinator.

They will investigate and when the details are agreed with all parties, an Incident Report form will be filled in online and sent by email to SEPS safety@glasgow.ac.uk. (University's Safety and Environmental Protection Service). A copy should also be sent to the H&S convenor (Mr. C. Carr craig.carr@glasgow.ac.uk) & SoMB admin team – smb-admin@glasgow.ac.uk

The form must be received by SEPS **within a maximum of 5 working days of the occurrence**. This is necessary to allow the University to comply with legally prescribed time limits for reporting of certain incidents to the enforcing authorities.

The Incident Report Webform or download the printable version of the form is available at: <https://www.gla.ac.uk/myglasgow/seps/reportanincident/>

19. **Reporting broken equipment & Bower Building defects**

- Broken equipment in the lab should be reported to your PI in the first instance.
- Building fabric defects should be reported to the following:
Craig Carr (Craig.Carr@glasgow.ac.uk) Ext 5081 rm 250, Bower Bldg.
Paul Graham (Paul.Graham.2@glasgow.ac.uk) Ext. 6151 rm 250 Sir James Black Bldg.
John McDougall (John.McDougall@glasgow.ac.uk) Ext 8447 rm 191 Sir James Black Bldg.

20. **Building Security, Access Times & Lone Working Policy**

Bower

Access to the Bower Building is controlled by an Access Card Security System. Your staff/student card must be set LOCALLY within the Bower building to work with the proximity readers. See Mr. Craig Carr, room 250 to have your card registered to work on the local system. Card Access times are set locally on the building's computer system and depend on the category of worker.

- For Staff: 7 days, 24 hours
- For UG Students & Visitors: 8-5 pm, Monday – Friday

ARC

Access to the ARC Building is controlled by an Access Card Security System. Requirements for card activation for the ARC labs are as follows:

- Completion of the ARC lab induction video and quiz (<https://moodle.gla.ac.uk/course/view.php?id=37595> then to self-enrol, please enter the word **induction** when prompted).
- Completion of relevant School and local lab safety induction.
- Confirmation of the above (including project/contract end date) in an email to Carol-Anne Smith and Aileen Gardner from resident PI or nominated deputy.

Davidson

Access to the Davidson Building is controlled by an Access Card Security System. Only for out of normal working hours access. Normal daily access is via the Wolfson link building entrance and facilities assistant box.

Sir Joseph Black

Normal daily access is via the main building entrance and facilities assistant box.

21. **Lone Working Policy**

<https://www.gla.ac.uk/myglasgow/seps/az/loneandoutofhoursactivities/>

a.

b. Safe Zone App

<https://www.gla.ac.uk/myglasgow/securityandoperationalssupport/>

22. **Biological Safety**

<https://www.gla.ac.uk/myglasgow/seps/biological%20safety/>

23. Chemical Storage and Hazard Symbols

There are potentially a wide range of hazards depending on the specific chemical. The SDS sheets supplied by the company selling the chemical, provide information on the chemical, its hazards, storage conditions and safe use. Please follow them.

CLP classification and labelling system (EU) has been in force since 1/6/2015. The new pictograms are in the shape of a red diamond with a white background. The old symbols had an orange background.

<http://www.hse.gov.uk/chemical-classification/labelling-packaging/hazard-symbols-hazard-pictograms.htm>

24. Chemical Waste Classification, Storage and Disposal

[https://www.gla.ac.uk/myglasgow/seps/chemical%20safety%20\(revised\)/](https://www.gla.ac.uk/myglasgow/seps/chemical%20safety%20(revised)/)

25. Spillages

Small Spills (less than 1 L):

- Wear proper personal protective equipment, including eyewear and gloves.
- Pick-up any broken glass using mechanical means such as forceps or tweezers and place in a puncture-resistant container for hazardous waste disposal.
- Using your laboratory spill kit, place the granules over the spill and allow the material to absorb. Place contaminated granules in a plastic bag. Put this bag in the container with the broken glass.
- Wash the affected area with a mild soap solution and place any additional materials in the waste container with the broken glass and granules.
- Remove disposable gloves and place them in the waste container. Seal the waste container and label it as hazardous waste. Tag with the white hazardous waste tag.
- Remove additional PPE and thoroughly wash your hands. Contaminated clothing or PPE may not be taken home or laundered without additional precautions, contact SEPS.

Large Spills (greater than 1 L):

- Cover the spill, if possible, to keep fumes down.
- Evacuate the area, closing the lab door behind you.
- Post a sign on the door stating, "DO NOT ENTER - CHEMICAL SPILL" (sign can be found in your Spill Kit).
- Call SEPS on Ext 5532.

26. Liquid Hydrogen (LN2) Handling

Liquid nitrogen is a hazardous cryogenic liquid (Temperature = -196°C). Skin contact with LN2 can cause:

- Cold burns, Frostbite and Hypothermia.

It is very important to wear PPE when handling liquid nitrogen i.e.

- Suitable gloves for pouring LN2 are NON-ABSORBENT cryogenic gloves. **They should NOT be dipped into LN2!**
- Lab coat
- Face shield or goggles
- Covered shoes.

The Expansion rate of LN2 to Gas is 1:683. A 25L flask would produce 18m³ of gas, enough to fill 9 telephone boxes! For this reason, it is very important that you only work with LN2 in a large open area of the lab because in an enclosed space, the resulting displacement of oxygen may

be sufficient to cause asphyxiation.

In the lab, wear PPE and work with small volumes of LN2 in 1-2 L cryogenic flasks and when filling the flasks from the main 25L Dewar.

If you need to refill the 25L Dewar with LN2 from the external tank (located outside at the back of the Bower), **you MUST be accompanied. DO NOT ATTEMPT TO DO THIS BY YOURSELF.**

27. **GM Safety Policy**

Before working with new Genetically Modified Organisms (GMO), either plant, bacterial or mammalian, a Biological COSHH Risk Assessment must have been completed by the PI to assess the hazards involved and safety measures that need to be employed when working with them.

Information on the GM guidelines can be found on the SEPS website:

<https://www.gla.ac.uk/myglasgow/seps/biological%20safety/gmriskassessment/>

3.0 Health & Safety: Roles & Responsibilities within the School

3.1 Head of School of Molecular Biosciences

The Head of School is responsible for the health and safety of staff, students, and visitors in all areas under their control, and is responsible for ensuring compliance with relevant legislation and the application of university safety policy in these areas. **The Day-to-Day management of Safety responsibility is delegated to Principal Investigators or Line Managers.**

In line with Health & safety at work act 1974 ensures there is a written and up to date Health & Safety Policy statement.

- Ensure delegated management processes in place in order that all staff and students receive a copy of the School Health & Safety policy document.
- Ensure Health & Safety induction training for all staff and students in accordance with your training and competency framework with appropriate recordkeeping.
- Ensure that risk assessments processes are in place for all relevant activities; and are of the
 - legally required “suitable and sufficient” standard.
- Ensure the roles and responsibilities within the School for Health and Safety are clearly defined and that staff delegated to Health and Safety are aware of their responsibilities.
- Ensure all staff with Health and Safety responsibilities are competent and have appropriate training to fulfil their role.
- Appoint a member of staff to convene the School Health & Safety Committee.
- Appoint a Safety Co-Ordinator for the School and ensure that they are adequately trained.
- Have local building Safety Co-Ordinator’s and specific subject Advisers in place as appropriate to assist the School’s Safety Co-Ordinator in fulfilling their role (Biological, Chemical, Radiation).
- Ensure that First Aid trained personnel in line with the Health and Safety at Work Act 1974 provide adequate cover for the buildings.
- Ensure the adequate provision of safety information, instruction and training is available for all staff, students, and visitors.

3.2 Principal Investigator and Line Manager

- Implement your local health and safety policy and arrangements.
- Carry out the health and safety plan and objectives.
- Ensure COSHH and Risk Assessments are undertaken and recorded and of the legally required “suitable and sufficient” standard.
- Ensure they approve, sign, and date all COSHH and Risk Assessments
- Ensure that staff, contractors, and students are following all safe systems and control measures.
- Provide induction training for all staff and students in accordance with your training and competency framework.
- Ensure any new processes are properly risk assessed before implementation.
- Ensure all new and existing equipment is checked for hazards, and users are trained in safesystems of work and risk control measures.
- Implement your health and safety training objectives identified in your health and safety plan or from your risk assessments.
- Provide staff with health surveillance if identified in risk assessments.

- Lead with Safety Management team on inspections and be involved in audits when asked.
- Ensure all instances of occupational ill health, accidents, and dangerous occurrences within your area of responsibility are reported to the University SEPS department in a prompt manner in line with RIDDOR regulations.
- Lead with Safety Management team on investigations into accidents and other reports (e.g., near misses). Take appropriate action when health and safety are likely to be compromised; if necessary, suspending an activity pending reassessment of the risk.
- Ensure when multiple PIs are running projects within a shared laboratory area communication and consistency in practices are in place.
- Keep yourself up to date with health and safety requirements for your area of responsibility. Use UCEA and USHA guidance on specific sector risks to support you.
- Liaise with Safety Management team annual program for statutory testing of equipment, as required for local exhaust ventilation, pressure systems, lifting equipment.

3.3 SMB Safety Committee

- Appointed by the Head of School and consisting of members from the main group of staff roles, safety representatives and covers the different locations within the school also includes student representation.
- Acts on observations and problems with the standard of health and safety within the school as reported to the committee.
- Sets remedial measures in motion.
- Ensure appropriate Risk assessments are in place within the school for both individual groups and general risk assessments.
- Disseminates safety information to staff and students.
- Refers issues to the Head of School and senior management.

3.4 GM Safety Committee

- To approve GM risk assessments as fit for purpose as submitted by the school's staff.
- To ensure safe practices and appropriate control measures are agreed with the PI before GM work starts.
- Refers any issues to the Head of School and senior management.

3.5 Safety Co-Ordinator's

- Responsible as directed by Head of School for creating and maintaining the Health and Safety management systems for the school and buildings.
- To provide systems and procedures to facilitate the school's safety needs.
- To review and update the School's Safety Manual under the direction of the safety committee and with final approval by the ICS Management board.
- Set up building and communal Safe Working Inspection schemes.
- Provide Building safety Induction for new starts staff and students.
- To support and advise groups on safety issues.
- Provide information on the SEPS run safety courses.
- Direct staff to locations/ websites and contacts for safety Information.
 - Part of the moderating team for uniformity across Risk assessments within the school.
 - Help ensure that general Risk assessments for the local building and practices are in place.
 - Conduct or co-ordinate laboratory Inspections and accident investigations.
 - Put in place schemes and practices to ensure that accidents or incidents are reported to SEPS in a prompt manner.

- Disseminating Health and Safety Information and reports to appropriate members of School staff and students and safety Committee.
- Ensure appropriately trained safety staff are in place within the buildings, (First Aid, Area Fire Officers, and Fire Wardens).
- Monitor the buildings to ensure a high standard of Housekeeping is maintained; equipment is serviced and inspected as required by relevant statutory processes.
- Keep a record of Toxins and Pathogens for the School, information supplied by PIs.

3.6 Safety Advisors (Biological, Chemical, Radiation and Laser)

- Specialised Safety Contact to advise staff and students in the school on matters concerning that area of safety.
- Role in moderating School's Risk Assessments as part of a team.
- Able to offer advice on their subject areas Risk Assessments, procedures and any containment levels required.
- Able to provide advice on spills and emergency procedures in their field.
- Highlight any bad practices in their specific area, training need requirements, or any recommendations to the ICS Safety Committee.
- Liaise with the University Safety Advisors as appropriate for information.
- Inform users and safety Committee of any related Inspections and their outcomes.
- Support the School's Safety Co-Ordinator when required.

Radiation:

- Make sure room radiation records are up to date in the containment rooms along with risk assessments (responsibility of the groups using these rooms to comply with this and ensure their groups recorded these correctly).
- Liaise with the Radiation Protection service as appropriate for requirements, permits and SEPA inspections.
- Provide training on local rules and regulations and procedures within rooms and ensure that Risk assessments are in place prior to any work commencing.

Laser:

- Ensure records and forms are in place for the groups managing equipment-involving lasers.
- Work with groups to ensure rooms are sufficient for the lasers working in these rooms and safety procedures are in place along with Risk Assessments.

3.7 GM Safety Advisor

- Chair the GM Safety Committee.
- To advise on GM Safety matters regarding procedures and ensure PIs are kept informed of changes to GM safety regulations or HSE guidance.
- To establish an appropriate membership of the GM safety Committee under the direction of the Head of School.
- Distribute submitted GM risk assessments to the committee for comments and / or approval. Maintain an up-to-date list of the GM RAs within the School.
- HSE of any new GM work assessed as Class 2 or above, and any updates or amendments to work previously notified.

Note: Safety Coordinators are Safety Advisors. Responsibility for health and safety lies with the head of the school but is delegated to Principal Investigators or Line Managers. It should NOT be assumed the responsibility of the Safety Co-Ordinator's or Safety Advisors.

3.8 Staff roles and responsibilities for Health & Safety within the School.

- Use machinery equipment, chemicals etc. and the means of production, or safety devices provided in accordance with the training and instructions they have received.
- Inform the School PI's line manager or Local safety coordinator of any work situation that might present a serious and imminent danger to health and safety or a shortcoming in the school health and safety arrangements.
- Read and sign all COSHH and Risk Assessments prior to commencing work.
- Familiarise yourself with relevant University or School policies and safety requirements applicable to your work.
- Inform your PI's or supervisors of newly identified risks in existing work, or new risks associated with new work and any training requirements.
- Comply fully with safety requirements and control measures, including the correct use of personal protective equipment, stipulated in risk assessments or local rules.
- Take reasonable care in all work activities and consult with PI's, Group Safety Reps or Safety Advisors in case of doubt.
- Familiarise yourself with relevant emergency procedures.
- Be aware of potentially unsafe conditions or equipment and report them.
- Report all accidents, dangerous occurrences, and work-related ill health.
- Register with the University Occupational Health Service for health surveillance, where required by university policy or risk assessment, and attend appointments and complete and return forms in a timely manner.
- Attend any training that has been identified as necessary by the School or Principal Investigator.

3.9 Students' role in School Health & Safety

- Students are not in the legal sense employed persons. However, students must comply with health and safety instructions, not to misuse or damage equipment provided and may be responsible for the consequences should they neglect to carry out a task required for the health or safety of others.

3.10 Visitors/ Honorary or Affiliates status workers

- Visiting workers and persons with Honorary or Affiliate status are expected to comply with safety procedures in the same manner as staff.

3.11 Security

- Never leave an open door or window unattended, please close doors and windows at the end of the day.
- Ensure the doors shut behind you on exiting the building (especially any automatic doors)
- If you are suspicious of any person in the Garscube Estate, please notify security on 2222 or Ext 5799. Gilmorehill Campus Ext 4444 (security). Paul O'Gorman LRC Ext 1000 (reception) or University security can also be called on 0141 330 4282.
- Do not let anybody you do not know into the building, ask politely if you can be of assistance. If they don't answer or become aggressive, don't confront them- call security.

3.12 Visitors

- All visitors should report to reception and wear a visitor's pass during their visit, which they

- should sign in and out where door access controls are in place in the building.
- In other areas, visitors should always be accompanied and not left unsupervised.
 - The person hosting the visitor is responsible for them during their visit to the building.

3.13 Lone Workers

- Risk Assessment Training is particularly important, as there will be no direct supervision of work, outwith normal working hours. It needs to be established that lone workers are following safe systems of work. Always assess the risks involved and, if in doubt, do the work within normal working hours. Working early in the morning, in the evening or at weekends, particularly when alone, requires additional precautions. The following rules therefore apply outside normal working hours:
 - Only authorised staff can work in the Laboratories outside normal hours.
 - Staff will only be authorised after they have signed a statement to say they have read the Safety Manual and will follow the guidance and local rules set out in the manual.
 - Workers who are not authorised (e.g., short-term Visiting Scientists, Summer Students, Honour's Project Students, maintenance engineers) must be supervised by an authorised member of staff when working in the Laboratories outside normal hours.
 - Anyone working in or entering the buildings before 8am or after 6pm or at any time during weekends must sign in when they enter (or at 7pm if they stay on after normal hours) and sign out when they leave. Logbooks for this purpose will be placed near the entry doors to buildings. Security staff, who check the Laboratories about every three hours, will see from these entries how many people are present.
 - Alternatively, you can also check in and out using the SafeZone app. In the event of a problem (power, water etc), call Security on 0141 330 4282 or use the SafeZone app who will respond and contact appropriate building out-of-hours emergency contact.
 - In an emergency call Security on 0141 330 4444 or use the SafeZone app for help.

Lone working policy :

<https://www.gla.ac.uk/myglasgow/seps/az/loneandoutofhoursactivities/>

4.0 Emergency Contacts

Emergency Service	Contact Information
Fire, Ambulance, Police	Internal: Ext 4444 External: Ext 9999

Security	Contact Information
Gilmorehill Campus	Ext 4444 or (0141 330) 4282

Davidson/Wolfson Link/Sir James Black Buildings:

Emergency Contacts	Contact Information
Paul Graham	Ext 6151
John McDougall	Ext 8447

Security	Contact Information
Gilmorehill Campus	Out-of-hours emergency contacts-keyholders contact security main gatehouse. Ext 4444 or (0141 330) 4282

Bower Building:

Emergency Contacts	Contact Information
Craig Carr	Ext 5081
Naomi Donald	Ext 2381
Mike Blatt	Ext 4771



5.0 Accident and Dangerous Occurrence reporting

In the first instance, all accidents and dangerous occurrences should be reported to the Principle investigator, local Health & Safety Co-Ordinator, and the convenor of the School Health & Safety committee.

The School Convenor of health and safety, local safety coordinator, and Principal investigator will investigate each Accident / Dangerous Occurrence firstly /Line Manager the details will be collated on the SEPS (Safety and Environmental Protection Service) online form all relevant parties, injured member of staff, student and witnesses will agree on the details before it is submitted. Any actions required to avoid a reoccurrence of the Accident / Dangerous Occurrence will be undertaken immediately. SEPS will inform the local School safety coordinator and the School Convenor of health and safety of any further actions required by the school to avoid a reoccurrence of the Accident / Dangerous Occurrence. These will be discussed fully with Principal investigator / Line manager and signed off by Principal Investigator /Line manager All follow actions will be reported back to SEPS when completed The Convenor of Health and Safety will circulate the school students and staff details of the Accident / Dangerous Occurrence and any safety advice relating to the Accident / Dangerous Occurrence. All accidents or dangerous occurrences will be discussed and noted at the School Health & Safety committee meetings. The minutes of these meetings are signed off by the Head of School.

All accidents or dangerous occurrences must be reported to Safety and Environmental Protection Service link to online form <https://www.gla.ac.uk/myglasgow/seps/reportanincident/#d.en.411120>

These are the following:

- Injury to any person arising out of, or in connection with work.
- Near-miss incidents and dangerous occurrences (including fires)
- Incidents of violence to staff that are related to their work.
- Diseases and work-related ill Health

In addition, an immediate telephone notification to SEPS (0141 330 5532) is required for the following:

5.1 RIDDOR - Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013

The death of any person

All deaths to workers and non-workers, with the exception of suicides, must be **reported** if they arise from a work-related accident, including an act of physical violence to a worker.

Specified injuries to workers

The list of 'specified injuries' in RIDDOR 2013 replaces the previous list of 'major injuries' in RIDDOR 1995. Specified injuries are (regulation 4):

- fractures, other than to fingers, thumbs, and toes.
- amputations

- any injury likely to lead to permanent loss of sight or reduction in sight.
- any crush injury to the head or torso causing damage to the brain or internal organs.
- serious burns (including scalding) which:
 - covers more than 10% of the body.
 - causes significant damage to the eyes, respiratory system, or other vital organs.
- any scalping requiring hospital treatment.
- any loss of consciousness caused by head injury or asphyxia.
- any other injury arising from working in an enclosed space which:
 - leads to hypothermia or heat-induced illness.
 - requires resuscitation or admittance to hospital for more than 24 hours.

For further guidance on [specified injuries](#) is available.

Over-seven-day incapacitation of a worker

Accidents must be reported where they result in an employee or self-employed person being away from work, or unable to perform their normal work duties, for more than seven consecutive days as the result of their injury. This seven-day period does not include the day of the accident but does include weekends and rest days. The report must be made within 15 days of the accident.

Over-three-day incapacitation

Accidents must be recorded, but not reported where they result in a worker being incapacitated for more than three consecutive days. If you are an employer who must keep an accident book under the Social Security (Claims and Payments) Regulations 1979, that record will be enough.

Non-fatal accidents to non-workers (e.g., members of the public)

Accidents to members of the public or others who are not at work must be reported if they result in an injury and the person is taken directly from the scene of the accident to hospital for treatment of that injury. Examinations and diagnostic tests do not constitute 'treatment' in such circumstances.

There is no need to report incidents where people are taken to hospital purely as a precaution when no injury is apparent.

If the accident occurred at a hospital, the report only needs to be made if the injury is a '[Specified injury](#)' (see above).

5.2 Occupational Diseases

Reportable diseases

Regulation 8 requires employers and self-employed people to report cases of certain diagnosed reportable diseases, which are linked with occupational exposure to specified hazards. The reportable diseases and associated hazards are set

out below.

- **Carpal Tunnel Syndrome:** where the person's work involves regular use of percussive or vibrating tools.
- **Cramp of the hand or forearm:** where the person's work involves prolonged periods of repetitive movement of the fingers, hand, or arm.
- **Occupational dermatitis:** where the person's work involves significant or regular exposure to a known skin sensitizer or irritant.
- **Hand Arm Vibration Syndrome:** where the person's work involves regular use of percussive or vibrating tools, or holding materials subject to percussive processes, or processes causing vibration.
- **Occupational asthma:** where the person's work involves significant or regular exposure to a known respiratory sensitizer
- **Tendonitis or tenosynovitis:** in the hand or forearm, where the person's work is physically demanding and involves frequent, repetitive movements.

Carpal Tunnel Syndrome

Carpal Tunnel Syndrome is caused by compression of the median nerve, which controls sensation and movement in the hand. It is not always caused by work-related factors. Typically, workplace risks are associated with the use of hand-held vibrating power tools, such as sanders, grinders, chainsaws etc.

Cramp of the hand or forearm

Where a cramp is so severe as to lead to a clinical diagnosis, it can be severely debilitating, and impair a person's ability to carry out their normal work. This condition is reportable when it is chronic and is associated with repetitive work movements. The condition is usually characterised by a person being unable to carry out a sequence of what were previously well coordinated movements.

An acute incident of cramp which may take place in the course of work is not reportable.

Occupational dermatitis

Dermatitis is reportable when associated with work-related exposure to any chemical or biological irritant or sensitising agent. In particular, this includes any chemical with the warning 'may cause sensitisation by skin contact', or 'irritating to the skin'. Epoxy resins, latex, rubber chemicals, soaps and cleaners, metalworking fluids, cement, wet work, enzymes, and wood can all cause dermatitis. Corrosive and irritating chemicals also lead to dermatitis. Construction work, health service work, rubber making, printing, paint spraying, agriculture, horticulture, electroplating, cleaning, catering, hairdressing, and florists are all associated with dermatitis.

Dermatitis can be caused by exposure to a range of common agents found outside the workplace. If there is good evidence that the condition has been caused solely by such exposure rather than by exposure to an agent at work, it is not reportable.

Hand Arm Vibration Syndrome

Workers whose hands are regularly exposed to high vibration, e.g., in industries where vibratory tools and machines are used, may suffer from impaired blood circulation and damage to the nerves in the hand and arm; the disease is known as 'hand-arm vibration syndrome'. Other names used in industry include vibration white finger, dead finger, dead hand, and white finger. Typically,

workplace risks are associated with the use of hand-held vibrating power tools, such as percussive drills and hammers, rotary grinders and sanders, chainsaws etc. Risks are also associated with holding materials, which vibrate while being processed by powered machinery such as pedestal grinders, riveting machines, rotary polishers etc.

Occupational asthma

Asthma is reportable when associated with work-related exposure to any respiratory sensitizer. In particular, this will include any chemical with the warning 'may cause sensitisation by inhalation'. Known respiratory sensitizers include epoxy resin fumes, solder fumes, grain dusts, wood dusts and other substances. Asthma is a common condition in the general population.

If there is good evidence that the condition was pre-existing and was neither exacerbated nor triggered by exposure at work, the condition is not reportable.

Tendonitis and tenosynovitis

Tendonitis and tenosynovitis are types of tendon injury. Tendonitis means inflammation of a tendon, and tenosynovitis means inflammation of the sheath (synovium) that surrounds a tendon. Workers who undertake physically demanding, repetitive work are at increased risk of developing these conditions. Physically demanding work includes (but is not restricted to) tasks involving repeated lifting and manipulation of objects (e.g., block laying and assembly line work), and activities involving constrained postures or extremes of movement in the hand or wrist.

Diagnosis by a doctor

A doctor must diagnose a reportable disease. Diagnosis includes identifying any new symptoms, or any significant worsening of existing symptoms. For employees, they need to provide the diagnosis in writing to their employer. Doctors are encouraged to use standard wording when describing reportable diseases on written statements they make out for their patients.

5.3 Exposure to carcinogens, mutagens, and biological agents

Regulation 9 requires employers and self-employed workers to report cases of occupational cancer, and any disease or acute illness caused by an occupational exposure to a biological agent.

Occupational cancers

Cases of cancer must be reported where there is an established causal link between the type of cancer diagnosed, and the hazards to which the person has been exposed through work. These hazards include all known human carcinogens and mutagens, including ionising radiation.

For example, the following diagnosed occupational cancers must be reported:

- mesothelioma or lung cancer in a person who is occupationally exposed to asbestos fibers.
 - cancer of the nasal cavity or sinuses in a person who is occupationally exposed to wood dust.
- Reports are only required when the person's work significantly increases the risk of developing cancer. In some cases, the medical practitioner may indicate the significance of any work-related factors when communicating their diagnosis.

Cases of cancer are not reportable when they are not linked with work-related exposures to carcinogens or mutagens. As with other diseases, cancers are only reportable if the person's current job involves exposure to the relevant hazard.

Biological agents

All diseases and any acute illness needing medical treatment must be reported when it is attributable to a work-related exposure to a biological agent. The term biological agent is defined in the Control of Substances Hazardous to Health Regulations 2002 (COSHH) and means a micro-organism, cell culture, or human endoparasite, which may cause infection, allergy, toxicity, or other hazard to human health. Work with hazardous biological agents is subject to specific provisions under COSHH.

Work-related exposures to biological agents may take place as a result of:

- an identifiable event, such as the accidental breakage of a laboratory flask, accidental injury with a contaminated syringe needle or an animal bite
- unidentified events, where workers are exposed to the agent without their knowledge (e.g., where a worker is exposed to legionella bacteria while conducting routine maintenance on a hot water service system)

A report should be made whenever there is reasonable evidence suggesting that work-related exposure was the likely cause of the disease. The doctor may indicate the significance of any work-related factors when communicating their diagnosis.

Further guidance on occupational illnesses associated with biological agents is available. Minor infections common in the community such as colds, bronchitis or stomach upsets cannot generally be attributed to work-related exposures to biological agents, and so are generally not reportable. However, where there is reasonable evidence of a work-related cause, such as inadvertent contact with the infectious agent during laboratory work, you should make a report.

Acute illnesses requiring medical attention must be reported when they result from a work-related exposure to a biological agent, including its toxins or any infected material.

6.0 Travel Safety and Working Overseas

School staff and students will periodically carry out work overseas. This may involve short and longer-term fieldwork, attendance at conferences and meetings and a range of other activities. Often, such work will involve minimal risk to the health and safety of an individual or exposure only to risks that are comparable to work within the UK. However, in some cases individuals may potentially be exposed to significant risks that can be very different from those with which they are familiar. Unless steps are taken to manage these risks this may place staff and students working overseas at increased risk of harm.

The University recognises that it owes all staff and students a duty of care and must ensure, as a matter of moral and legal principle, that staff or students who travel or work overseas are protected, so far as is reasonably practicable, from risks to their health and safety.

The University has prepared guidance on the procedures to be followed when travel is planned. This applies to international travel and travel within the UK. School staff and students should adhere to the guidance and travel policy outlined in the link below. This is for work in the UK and overseas.

University of Glasgow Travel Safety Protocol

https://www.gla.ac.uk/media/Media_846969_smxx.pdf

Risk Assessment form

<https://www.gla.ac.uk/myglasgow/seps/az/travelfieldworkandplacement/travelriskassessmentprocedure/>

Travel Insurance Link

<https://www.gla.ac.uk/myglasgow/finance/staffsections/insuranceandrisk/travelinsurance/>

7.0 University Services Medical Advice

*Barclay Medical Practice - Fraser Building, 65
Hillhead Street,
Glasgow G12 8QF.
Tel 0141 342*

Barclay Medical Practice provides a range of services, including travel advice, vaccinations and immunisations including the seasonal flu vaccination.

University of Glasgow Emergency and Crisis Support Service

[University of Glasgow Crisis Support](#)

For help and support to deal with accidents or incidents with staff and students.

8.0 General Safety Regulations and Information

- **Be tidy.** Clutter is a hazard to yourself and others.

- **Contact lenses are not advisable.** Vapours can concentrate in solution under them and in the event of a splash of chemical in the eye; it may be difficult to remove a lens (because of acute pain), making irrigation impossible and damage severe. Wear Safety glasses!
- **Disabilities** or health problems that might affect your Safety or the Safety of others **MUST** be made known to the Safety Adviser or your supervisor before starting work. Known carriers of a serious disease should consult the University Medical Officer who may provide the Safety Adviser with confidential advice relating to potential hazards to other workers.
- **Do not eat or drink in laboratories.** Smoking & vaping is prohibited in all buildings.
- **Do not mouth-pipette.**
- **Do not obstruct** corridors, fire exits, fire appliances, first-aid boxes.
- **Babies and young children** are not allowed in laboratories.
- **Keep Fire- and Smoke-stop doors closed** whenever possible.
- **Label** cultures, solutions, etc. clearly and indelibly with your name and their description.
- **Use hazard-warning labels** where appropriate.
- **Large bottles (e.g., 2.5 litre) or heavy objects** should not be placed on high shelves (i.e., above shoulder height).
- **Learn how to use** Fire alarms, Extinguishers, etc.
- **Learn** location of fire alarms, emergency exit routes & other emergency equipment. Contact your building safety fire officer if you are unsure.
- **Never run or lark about** in or near laboratories; you may cause a serious accident.
- **Potentially hazardous work** should never be carried out when alone in the building or laboratory. If you must follow a hazardous procedure, make arrangements in advance for someone to be present to help if needed.
- **Read** and follow all relevant safety information provided by the School and SEPS
- **Turn OFF** gas, water & electricity supplies and apparatus when not required.
- **Wear lab coats**, plus any additional appropriate protection. **Remove** protective clothing before entering non-lab areas. Get your lab coats laundered regularly.
- **Wash hands** before leaving the laboratory.

Personal Protective Equipment (PPE)

- Appropriate personal protective equipment (PPE) should be used where required.
- PPE is often essential for many aspects of work but generally only as additional rather than the main method of protection.
- Suitable laboratory coats should be used.
- Suitable gloves should be used where required.
- Suitable spectacles, goggles or face shields should be used where required.
- Specialist gloves can be used for specific biological, chemical, and physical hazards (e.g., cut resistant Kevlar or chain mail gloves).
- Gloves should be worn for all work with hazardous or infectious materials.
- Gloves should be used with care to prevent contamination of materials, surfaces, and equipment.
- Gloves should be removed and disposed of if they become contaminated.
- PPE should not be used as an alternative to more effective control measures.
- PPE should be removed before leaving the work area and kept apart from normal clothing.

9.0 Computing

<https://www.gla.ac.uk/myglasgow/seps/>

The University and the School recognises that the majority of staff and students use computing

equipment extensively. Therefore, it is important to provide a working environment, facilities and information that permits such activities to be carried out with minimal risk to the health and safety of individuals.

The risks

The most common type of complaint associated with computer use includes pain in the arms, hands, neck, and shoulders (known as work related upper limb disorders - WRULDS) as well as back pain. Possible causes include:

- Sitting for too long in one position particularly if on a badly designed chair or one that is poorly adjusted.
- Insufficient breaks.
- Awkward positioning of hands at keyboards.
- Non-work factors (e.g., sports or hobbies).

The controls

All workstations must meet minimum health and safety requirements. Where someone identified as a "user", further assessment, uses a workstation is needed.

Training & Self-Assessment

The University and the School encourages a self- assessment approach to computer workstations. The guidance documents in conjunction with the Computer & DSE assessment online training on Moodle can be used as guidance on how to conduct a workstation self- assessment. Once you are logged in select 'Safe Use of Computers' training. This consists of a DSE presentation and interactive guidance. Then you will be able to complete the DSE self-assessment form. (Computer equipment assessment) FORM me. This will then enable you to set up your workstation correctly and any remedial measures required.

Computer equipment assessment form:

https://www.gla.ac.uk/media/media_429683_en.docx

Waste disposal

When disposing of computing equipment, you must comply with the Waste Electrical & Electronic Equipment Regulations. The University has developed procedures to help you in this and further information is available in the Waste section of SEPS web site.

The waste Disposal form for CCL north should be filled in with the relevant details and asset (PAT testing number). Then this should be emailed to CCL north to arrange a date for the pickup. All personnel details and information should be removed. The asset number and labels should now be removed. The technician in charge of the building also notified that this piece of equipment has gone off site and it can then be removed from the equipment database.

Waste disposal policy can be found here: <https://www.gla.ac.uk/myglasgow/seps/specialistwastes/>

10.0 Laboratory and Office Inspections

As part of its Health & Safety policy, the school will carry out three monthly Inspections of laboratories and office space. This is to ensure compliance with Health and Safety regulations, guidelines, and approved codes of practice. Its objective is also to build a positive health and safety culture promoting best practice throughout the school laboratories and office space. The Inspections will be carried out by the convenor of Health & Safety, local safety coordinator and Supervisor /Principal Investigator or a nominated representative.

The inspection team will have:

- A knowledge of workplace inspection techniques.
- An understanding of the process activity or the area.
- A knowledge of the Hazards associated with the area of work.
- A knowledge of the acceptable performance standards required to control the hazards within the area of the work.
- Be able to complete a checklist form and write a report.
- Have experience in carrying out Inspections.

The inspection will Key Performance indicators will be:

- Induction training of staff and students.
- Completed risks assessments.
- Staff training.
- Maintenance of equipment.
- Compliance of waste streams.
- PPE being worn.
- Standards of housekeeping, including storage of chemicals, biological agents, radiation.
- Fire and emergency procedures.
- First Aid provision.

The inspection will be completed using online software, a copy with actions and recommendations with completion dates will be sent to Supervisory/ Principal Investigator Follow ups will be recorded and discussed at the School Operation group and at the School Health and Safety committee with minutes signed by Head of School. The Inspections will be held on a dedicated School administration computer drive.

Making sure YOUR laboratory area is safe for cleaning staff:

You have a duty of care for those who come into your lab but do not necessarily know what goes on there, this includes cleaning staff. They have a reasonable right to expect that you will take steps to ensure that they do not come to harm from your work. So please make them aware of any known hazards or risks in your laboratory area.

- Cleaning staff will clean wash-hand basins but are not expected to clean laboratory sinks.
- Cleaning staff are generally not expected to clean laboratory benches. An exception to this may be where the benches have been completely cleared of all hazardous substances, materials, and equipment specifically for the purpose of periodic deep cleaning of the laboratory, but this is subject to special prior arrangements with cleaning supervisors.
- Corrosive, flammable, and hazardous chemicals should not be left on the open bench when not in use. Chemicals should be placed to the rear of the bench when not in use, or on shelves above the bench.
- All apparatus left running overnight must be clearly labelled with information describing actions to be taken, and the person(s) to be contacted, in the event of an accident involving the equipment.
- Cleaning staff should be excluded from certain areas due to special local hazards. Cleaning procedures should be undertaken instead by laboratory staff. Controlled Isotope rooms. These should be clearly signposted to make perfectly clear that access is restricted specifically to authorised personnel only, and by controlled door access systems.
- Pressurised gas cylinders must be securely fastened, usually in an upright position, by

the use of purpose-designed brackets and clamps, chains or belts, and care should be taken to ensure that there is no risk of cleaners becoming snagged up in connecting pipework.

11.0 Work experience and young workers

The School recognises that young persons under the age of 18 may be at particular risk due to a lack of experience in the workplace, possible lack of maturity and other physical factors relating to their age. Before commencing work, the law therefore requires that, where a young person is at work, the risks arising from their age be specifically assessed and considered in planning and managing the activity. Where young persons are here as University employees, this can be done either as an explicit part of normal workplace risk assessments or can be a separate exercise. Where young persons are here for work experience the procedures detailed in the following section must be followed.

HSE provides advice on managing the risks to young workers here:

<https://www.hse.gov.uk/young-workers/index.htm>

Work experience procedures

The University has long acted as a provider of work experience for school pupils and has found that this is beneficial both to those seeking the experience and to the University units involved. **Where work experience within the school is provided to pupils under 16 years old there is a legal obligation that a risk assessment be carried out and that the findings of the risk assessment be brought to the attention of the pupil's parent or guardian.**

To allow this to be done the form linked below should be used to prepare a risk assessment for all work experience pupils coming to the University.

It is the responsibility of the Unit providing the work experience to:

- Prepare a specific risk assessment for the work experience activities.
- Send a copy of the risk assessment to the pupil's parent or guardian.
- Send a copy of the risk assessment to the Safety and Environmental Protection Service (for monitoring purposes).

The pupil's school may also require a copy of the form or may require completion of their own risk assessment document in addition to University procedures.

A copy of the risk assessment should be retained within the area in which the pupil is working [Work Experience Risk Assessment](#).

12.0 Occupational Health Provision

12.1 Health Surveillance

It is the responsibility of those who supervise staff or students (e.g., line managers, PIs, PhD supervisors etc.) within Schools, Colleges, and University Services to ensure that their risk assessment processes take account of the potential need for health surveillance to be provided for members of their staff and, where appropriate, for research students and affiliates. SEPS can provide advice and support on this and have prepared the guidance below to help explain the health surveillance aspect of the risk assessment process. This is not a new requirement but is simply a clarification of the previous requirements.

<https://www.gla.ac.uk/myglasgow/seps/az/healthsurveillance/>

The University has an [Occupational Health Service](#) which is able to advise and monitor on all aspects of staff health related to their work. All staff and students planning to work in any laboratory that uses human derived material (blood samples, urine samples, primary cells in tissue culture, etc.) are strongly advised to undergo a **Hep B immunisation programme** the need for this should be determined by risk assessment. If you require advice, please contact Monica.Tsimbouri@glasgow.ac.uk Principal Investigators should fill in the **Health Surveillance risk assessment form and Health Surveillance referral form Occupational Health**. Booster injections are no longer routinely offered, however if an individual is uncertain as to their immunisation status, contact the appropriate Occupational Health Unit, with the appropriate Risk Assessment for this work. Staff engaged in working with Animals should undergo routine **Respiratory surveillance**.

This can again be initiated by sending in a **Health Surveillance risk assessment form** for this work along with a **Health Surveillance referral form**. The Occupational Health Unit will contact the member of staff or student directly to make an appointment **for** their first visit then **a lung function test will be completed on a yearly basis**, details on which can be found on the Occupational health Website along with any other health related issues.

- Occupational Health Surveillance [link](#)
- Health Surveillance risk assessment [form](#).
- Health Surveillance referral [form](#).

Details for referring a member of staff to occupational health can be found [here](#) - all referrals must be sent to the MVLS Human Resources contact for the School in the first incidence.

13.0 New and Expectant Mothers at Work

New or expectant mothers can be at risk from common work hazards. There is a legal requirement to assess such risks and to ensure that suitable control measures are in place to protect women who may be at risk.

A risk assessment template can be found on the section of the SEPS website:

<https://www.gla.ac.uk/myglasgow/seps/az/newandexpectantmothers/>

This form should then be discussed with the Safety Co-Ordinator for the building and the appropriate controls put in place to work safely. This form also requires it to be signed by the PI / Line Manager. When a member of staff has provided notice that they are pregnant or breastfeeding, a specific individual assessment must be made of the work of carried out by that person to ensure that they are not put at risk during and immediately after their pregnancy. Particular attention should be paid to the actual tasks that they have to perform during their work to ensure that any risks associated with these are adequately controlled. The risk assessment should be reviewed at regular periods outlined on the form.

- New or expectant mothers risk assessment [form](#).

13.1 Potential Hazards for Risk Assessment

Physical hazards:

- Manual handling should be avoided by pregnant women unless the risks are judged to be low.
- Women who are working with computers may experience difficulties achieving a comfortable working posture as the pregnancy progresses and difficulties in sitting for long periods.
- As soon as their pregnancy is confirmed staff working with ionising radiation should inform their Radiation Supervisor who must arrange to minimise their exposure to radiation.

Further advice is available from the [Radiation Protection Service](#).

Chemical hazards:

- Users should note that correctly, managed work with a chemical should entail very little exposure to hazardous chemical substances and that use is NOT necessarily the same as exposure.
- During pregnancy, particular care should be taken to guard against skin absorption by using control measures, where possible (e.g., fume cupboards, enclosed processes etc.) and by using personal protection as an additional precaution, (e.g., gloves, lab coats, face shields etc.).

Carcinogens, teratogens, and mutagens:

Substances will be labelled with the Hazard control phrases, which indicate that a particular hazard is associated with this material.

- **H340:** May cause genetic defects *
- **H341:** Suspected of causing genetic defects *
- **H350:** May cause cancer.
- **H351:** Suspected of causing cancer *
- **H360:** May damage fertility or the unborn child
- **H361:** Suspected of damaging fertility or the unborn child*
- **H362:** May cause harm to breast-fed children.
- *(State route of exposure if it is conclusively proven that no other routes of exposure cause

the hazard)

These materials are particularly hazardous to those trying to conceive a child or to new or expectant mothers and exposure to them should be avoided by these groups of workers.

Biological Hazards:

Normally the precautions taken in biological laboratories are such as to minimise the risk of accidental exposure of any staff to the agents handled. In many cases good laboratory practice will be sufficient to adequately control the risk to new and expectant mothers.

However, there are risks associated with some biological agents where additional precautions may be appropriate. This may include ceasing to work with such agents for the duration of the pregnancy and for a period of time after the birth.

Guidance can also be found at the [HSE Website](#)

14.0 Biological Safety

Health and safety, animal health, plant health and environmental legislation require the University to have effective controls in place to protect people and the environment against the risks created by our work. Please read this guidance on biological safety which is provided to help principal investigators and researchers to safely carry out your work.

SEPS [website](#) for biological safety information.

Essentials for Biological COSHH Risk Assessment

Biological COSHH Risk Assessment information can be found on the SEPS Biological safety [website](#).

Some Important Excerpts from these pages:

Biological COSHH risk assessments are required before work commences for all work involving the possession or use of biological agents and hazards or where there is a risk of exposure to biological agents or hazards. Principal investigators are responsible for ensuring that the risk assessment and controls are carried out, adequate for the work, regularly monitored and that the assessment and controls are reviewed and revised.

Important steps in Biological Risk Assessment:

- Biological COSHH risk assessment is used to assess and control risks to humans, animals, plants, and other aspects of the environment arising from the use of biological hazards in the work.
- Biological COSHH risk assessments must be done in advance and by competent persons. Consult and communicate with researchers and Safety Advisers.
- Biological COSHH risk assessments and controls must be suitable and sufficient and proportionate to the risks.
- Consider the biological hazards and the work activity.
- Decide who or what might be harmed and how.
- Assess risks relating to biological agents and hazards.
- Decide on the hazard group (1 - 3).
- Decide on the containment level (1 - 3).
- Decide what control measures are necessary to prevent or adequately control exposure and minimise the risks.
- Control measures must be implemented, monitored, and maintained.
- Decide whether health surveillance and monitoring of exposure is required.
- Ensure biological agents and hazards are safely handled, stored, transported,

inactivated, and disposed of.

- Ensure there are plans and procedures to deal with emergencies.
 - Ensure workers are properly informed, trained and supervised to enable them to perform the work safely and competently.
 - HSE notification and consent is required for hazard group 3 and several hazard group 2 biological agents.
 - Scottish Government Animal Health licenses are required for work with certain animal pathogens.
 - Biological COSHH risk assessments and other relevant records must be kept by the relevant principal investigators.
 - Biological COSHH risk assessment must be reviewed and revised where they are no longer valid or where there are significant changes to the activity or risks.
- Biological COSHH risk assessment [form](#).
 - SEPS [link](#) to biological risk assessment including forms.

14.1 Basic Requirements for Work with Biological Agents and Hazards

Hazard Group 1

The possession or use of hazard group 1 biological agents and hazards is subject to the following.

Biological COSHH risk assessment

A biological COSHH risk assessment is required for hazard group 1 biological agents and hazards. Complete the University biological COSHH risk assessment form.

Monitoring

The PI must monitor the work to ensure that the controls are effective and used by all group members.

Review

Biological COSHH risk assessments must be reviewed and amended immediately where there are any changes to the activity or the risks.

Records

The PI must keep all biological COSHH risk assessments including all revised versions and other relevant records. Please keep electronic versions of all risk assessments and where possible add them to the School J drive. This can be accessed by your local safety co-Ordinator. These files will be reviewed by an Annual Audit.

Hazard Group 2

The possession or use of hazard group 2 biological agents and hazards is subject to the following requirements.

Biological COSHH risk assessment

A biological COSHH risk assessment is required for hazard group 2 biological agents and hazards. Complete the biological COSHH risk assessment form.

Pathogen and toxin registration

Hazard group 2 biological agents and hazards must be registered with the management unit and the Safety and Environmental Protection Service (SEPS) using the pathogen and toxin registration form. The registration of pathogens and toxins must be done before any biological agents or hazards are brought into the university.

Monitoring

The PI must monitor the work to ensure that the controls are effective and used by all groupmembers.

Review

Biological COSHH risk assessments must be reviewed and amended immediately where there are any changes to the activity or the risks.

Records

The PI must keep all biological COSHH risk assessments including all revised versions and other relevant records. Where possible please keep electronic versions of all records, these can be added to the School J drive in the Health and Safety folder. These files will be reviewed by an Annual Audit.

Approval of Biological COSHH Risk Assessments

The assessor and principal investigator must sign and date the form to state that they have assessed the risks and reviewed and approved the risk assessment. You should consult with other people who might be adversely affected by the work where it is necessary, including other groups and workers. This form should be filled in prior to starting any new work and agreed by the group safety representative, who should then file them centrally on their group's space in the Health and Safety folder on the J-Drive for Biological safety. These files will then be reviewed by annual audit.

14.2 GM Risk Assessment

Safety Regulations and Information for Research on Genetically Modified Organisms

Staff are reminded that ALL work involving Genetically Modified Organisms must, by law, be registered with and approved by the appropriate GM Safety Committee within the University.

To ensure that the University meets its legal obligations, please check your records, and ensure that all current work involving GMOs is covered by an up-to-date registration. If you are unsure of the current status of your registered projects, please contact Joel.Milner@glasgow.ac.uk or Craig.Carr@glasgow.ac.uk. Appropriate forms for new proposals and for amendments to existing projects can be found at <http://www.gla.ac.uk/services/seps/forms/>.

Essentials of GM Risk Assessments

GM risk assessments are required before work commences for all work involving the possession or use of genetically modified organisms. Principal investigators are responsible for ensuring that the risk assessment and controls are carried out, adequate for the work, regularly monitored and that the assessment and controls are reviewed and revised.

There is a legal requirement for GM risk assessments to be reviewed and advised on by a Genetic Modification Safety Committee (GMSC). Genetically modified organisms must not be brought into the University, obtained or any work conducted until GMSC permission is given for the GM risk assessment. As per the RISK Assessment with GM Safety Committee advice and permission is required for all Class 1, 2 and 3 genetically modified organisms.

HSE notification is required for Class 2 and 3 activities. HSE consent required for Class 3 activities. Scottish Government Animal Health licenses are required for work with certain animal pathogens.

- [Link](#) to GM Risk Assessment.

Approval of Biological COSHH Risk Assessments

The assessor and principal investigator must sign and date the form to state that they have assessed the risks and reviewed and approved the risk assessment. You should consult with other people who might be adversely affected by the work where it is necessary, including other groups and workers.

This form should be filled in and signed off by PIs or Line Managers should then file them in the area where the work is taking place. These files will then be reviewed by annual audit.

14.3 Biological Security for Pathogens and Toxins

To prevent terrorism certain pathogens, toxins and their genetic materials are controlled under the Anti-Terrorism, Crime and Security Act (ATCSA). Principal investigators who wish to acquire, retain, or use any of these pathogens, toxins or relevant genetic materials must obtain prior permission from the Head of School and ensure that they are registered before they are brought into the University. Principal investigators must notify their School and the Safety and Environmental Protection Service (SEPS) by registering the pathogens, toxins and relevant genetic materials using the pathogen and toxin registration form. The Head of School must ensure that the possession of any of these pathogens or toxins is immediately notified by their unit to the Counter Terrorism Security Adviser (CTSA) at Police Scotland.

Anti-Terrorism, Crime and Security Act Schedule 5 List of Pathogens and Toxins can be found on the SEPS website. Click [here](#) for more information on how to How to Notify the Police of Possession of Schedule 5 Pathogens and Toxins. All information on Pathogen and toxin registration can be found on the SEPS website [link](#).

15.0 Requirements and General Information for working in Hazard Category 1 and 2 Containment Laboratories

Local Rules and Risk Assessments:

- All workers and visitors have health and safety responsibilities.
- Risk assessments must be carried out where they are required including general risk assessments, COSHH, Biological COSHH and GM risk assessments. Forms

- Biological COSHH risk assessments will help you identify the biological hazards, evaluate the risks, and decide on appropriate control measures to enable you to do the work safely and reduce the risks of accidents.
- All workers and visitors must have adequate information, instructions, training, and supervision.
- Risk assessments, controls and standard operating procedures must be reviewed and amended where there are significant changes to the activity or risks.
- Principal investigators must keep risk assessments, standard operating procedures, and other important records. There should be adequate communication and cooperation between users of shared laboratories and facilities in relation to the hazards, risks and control measures required to protect health and safety.
- Safety Coordinators and Safety Advisers are available to provide advice and support on health and safety management.

Good Microbiological Practice (some reminders)

- Label cultures carefully and accurately.
- Be tidy; avoid clutter.
- Clear out fridges and freezers regularly.
- Cover any cuts or abrasions with a waterproof dressing.
- Discard contaminated disposables into double-thickness autoclave bags, and washables into suitable disinfectant solution for organisms being used.
- Keep contaminated tips, Eppendorf's etc. in suitable containers; don't leave lying on the bench.
- Put a disinfectant (suitable biocide for organisms used in the laboratory) in waterbaths; replenish as directed by risk assessment.
- No eating/drinking/putting everyday objects into the mouth.
- No mouth pipetting.
- Swab benches regularly with a suitable disinfectant for the organism you are working with or (not alcohol! Fire hazard!) Wipe up spills of microorganisms and clean contaminated areas with disinfectant.
- Wash hands regularly and when leaving the laboratory.
- Wear protective clothing (lab coats)
- Keep outdoor clothes out of laboratory spaces.

The safe handling of microbial cultures requires manipulative skill and so anyone intending to handle cultures must obtain advice from a member of their research group experienced in dealing with micro-organisms. In addition, the following points must be noted:

- Wire loops should not be over-charged with liquid when flamed; the loop may 'spit' if heavily charged and the material which flies off is not necessarily sterile.
- Cultures of micro-organisms must not be pipetted by mouth. Use a pipette. Contaminated pipettes must not be laid on the bench but released tip downwards into a jar of disinfectant suitable for the organisms being used. Contaminated Pasteur pipettes and slides should also be totally immersed in a (separate) plastic jar (e.g., Jencons Sharp-Safe) of disinfectant. After disinfection, the jar should be drained, capped, and incinerated. Syringe needles, unsheathed, must be disposed of in a CinBin.
- **It is advised to use plastic disposal loops where possible.**

Destruction/Disposal of Cultures

- Each lab group must have a written policy appropriate for the destruction of any viable micro-organisms used.
- Microbiologically contaminated material should only be washed up or disposed of after effective treatment with disinfectant or after additional sterilisation by autoclaving or incineration.
- For pelleted material, cell supernatants or spilled live organisms (including contaminated glassware, swabs, etc.) use a suitable disinfectant to kill the organism.
- For pipettes and mildly contaminated glassware prepared fresh daily, for at least 1 hour.
- Used glassware should use a suitable disinfectant to kill the organism. Solutions should be disposed of down the sink with copious (at least 20-fold) volumes of water. If there is to be no additional sterilisation by autoclaving, disinfection should be extended for at least 24 hours.
- Autoclaving of contaminated material should be carried out using a 'kill' run (i.e., 134°C for 18 minutes). Polypropylene tubes (but not polycarbonate ones) can be autoclaved. Polycarbonate tubes may be disinfected by soaking them in a suitable disinfectant to kill the organism but not in phenolic disinfectants.
- All microbiologically contaminated materials must be sterilised before disposal. Liquid cultures can be killed either by chemicals or by autoclaving. Culture plates should be autoclaved. Culture flasks, centrifuge tubes, bottles and caps must be properly sterilised after use with live cultures. Glassware should be autoclaved.
- Polypropylene tubes (but not polycarbonate ones) can be autoclaved. Polycarbonate tubes may be disinfected by soaking them in a suitable disinfectant to kill the organism.
- Bags containing items awaiting autoclaving should be further contained with a robust container such as a plastic bin.

Accidents with Biological Hazards

- All spillages must be reported using an Injury or Dangerous Occurrence form even when no personal injury is involved.
- If hands become contaminated, they should then be washed using a suitable disinfectant before putting on disposable gloves to clean up. A contaminated laboratory coat must be removed to be autoclaved if practicable or disinfected immediately and autoclaved later. A freshly laundered coat should be put on. Any contaminated personal clothing must also be removed and treated in the same way.
- If a tube, culture bottle, or flask is broken, the area should be flooded with a suitable disinfectant to kill the organism immediately which should be allowed to act for 30-60 minutes after which the area should be cleaned up with water and allowed to dry. Broken glass should never be picked up with the fingers. Forceps or a pan and brush should always be used, and these should be disinfected after use.
- If bacterial cultures are spilt on the bench or floor, the nearest window must be opened, and 10 minutes allowed for the aerosol and droplets to disperse. Work must be stopped in the area and a warning notice posted. The spilt material should then be mopped up with a suitable disinfectant which should be allowed to act for 30-60 minutes, after which time the area should be cleaned up with water and allowed to dry. The hands should then be washed with a suitable skin disinfectant.

Opening of ampoules

Ampoules may be opened with the minimum of risk as follows:

The bottom of the ampoule should be held in several layers of tissue to protect the hands and a file mark made at about the level of the middle of the cotton wool plug which is inside the tube. A red-hot glass rod or sealed Pasteur pipette should be applied to the mark. The glass will crack allowing air to

enter the ampoule and equalise the pressures. After a few seconds the ampoule should be wrapped in a few layers of tissue or held in a small ball of plasticine and broken along the crack. The tissues and ampoule neck can then be discarded into a suitable disinfectant for the organisms being used. About 0.5ml of broth is added to the ampoule, very slowly, drop by drop, with a Pasteur pipette to avoid blowing dried material out. The contents may then be mixed without bubbling and withdrawn into a culture tube.

Aerosols and droplets

Aerosols constitute a major infection hazard and may persist in the air for some time. Sources of aerosols and droplets include:

- Opening the screwcaps of universal containers
- Opening of Snap-On closures on plastic containers or plug stoppers.
- Rinsing Pasteur pipettes when transferring dilutions etc.
- Breakage of containers in centrifuges
- Accidental breakages
- Homogenising by mechanical means (particularly at high speeds)
- Ultrasonic treatment
- Operation of centrifuges
- Guard against excessive production of aerosols by, for example, careful, non-violent pipetting. When pipettes are rinsed, e.g., between dilutions, or the contents are discharged into media or disinfectant, the tip of the pipette should be submerged and the contents expelled gently, without bubbling. For Modifications of pathogens in ACDP hazard group 2 which involve risk of aerosol production, a Class 1 microbiological safety cabinet or equipment designed to contain the aerosol must be used.

General Information

- Procedures that produce hazardous or infectious aerosols must be adequately contained (e.g., equipment, safety cabinets, centrifuges, shakers etc.).
- Microbiological safety cabinets should be used for work where hazardous or infectious materials aerosols could be produced.
- Centrifuges should have sealed buckets or rotors which can be opened inside safety cabinets.
- Avoid the use of sharps unless really required and then adequate risk controls should be used.
- Avoid generating aerosols.
- Disinfect equipment and working surfaces after use where required.
- Wash hands after completion of work activities and immediately after any contamination is suspected or handling hazardous materials.

Signage and Security

- Relevant safety signs should be placed on laboratory doors (e.g., biological hazards, chemical hazards, radiation hazards, containment level and gas cylinders).
- Access should be restricted to only authorised persons.
- Visitors and contractors must be adequately supervised.
- Access to laboratories must be controlled using suitable means (e.g., lock and key, swipe card, digital lock etc.).

16.0 Working with Human Material

Precautions must be taken when handling any biological materials of human origin. Staff working with such materials should be familiar with the recommendations contained in the HSAC and ACDP guidance documents. A Risk Assessment of the health risks before starting work with Human blood, tissue and other specimens must be completed and given to the PI for signature and approval. Advice can be sought from the School Safety Advisors SEPS. The risk assessment should be kept in the laboratory read and signed before commencing work. This risk assessment must be specific to the procedures involved in the work and take account of the nature and source of the samples to be handled. In many cases the risk assessment will identify the potential of a fatal infection arising from the work; fortunately, the consistent application of good working practices and **avoiding the use of sharps** will eliminate, or at least substantially reduce, the risk of serious illness.

Hepatitis B immunisation

All staff and students planning to work in any laboratory that uses human derived material (blood samples, urine samples, primary cells in tissue culture, etc.) are strongly advised to undergo a Hep B immunisation program. The need for this should be determined by risk assessment. The immunisation consists of three injections, the costs of which will be met by the Health & Safety Budget. Booster injections are no longer routinely offered, however if an individual is uncertain as to their immunisation status, contact the appropriate Occupational Health Unit. Anyone working with human biological samples, who declines immunisation, will be required to sign a declaration to this effect. See Hepatitis B Immunisation form on the school website for Advice on Hepatitis B Immunisation.

Measures that should be used:

- The use of sharps should be avoided wherever possible, (blunt/semi blunt needles are now readily available).
- Generation of aerosols must be avoided.

16.1 Exposure to Human material

Exposure:

In the event of skin exposure to clinical material wash with copious amounts of water and Hibi scrub; or equivalent.

If mucous membranes are contaminated flush with water/ eyewash and seek medical advice. In the event of Needle stick or similar injury encourage the wound to bleed under running water for 10 minutes. Seek medical advice. Fill in an accident report form online as soon as possible and return it to SEPS. With a copy to the School Safety Co-Ordinator.

To obtain urgent advice:

Contact the A&E Department of your nearest hospital. Then, at the earliest opportunity, report the incident to the University Safety & Environmental Protection Service with all the available details on the next working day.

All fresh Human Material must be handled using containment Level 2 practices as a minimum. Do not work with such material if you are unfamiliar with what that requires and seek training.

NOTE: Human blood and tissues which are not being used for establishing cell cultures must also be handled with special care until a stage is reached where infectious agents will no longer survive (E.g., addition of guanidine hydrochloride, RNAzol or TRIZOL, in RNA preparations).

For urgent advice:

Contact the A&E Department of your nearest hospital. Then, at the earliest opportunity, report the incident to the University Safety & Environmental Protection Service with all the available details on the next working day.

All fresh Human Material must be handled using containment Level 2 practices as a minimum. Do not work with such material if you are unfamiliar with what that requires and seek training.

NOTE: human blood and tissues which are not being used for establishing cell cultures must also be handled with special care until a stage is reached where infectious agents will no longer survive (e.g., addition of guanidine hydrochloride, RNazol or TRIZOL, in RNA preparations)

17.0 Microbiological Safety Cabinets

For experiments with pathogens in ACDP hazard group 2 which involve risk of aerosol production, a Class 2 microbiological safety cabinet or equipment designed to contain aerosols must be used. Ensure you are familiar with the type of cabinet you are using and that you are using it as instructed in the induction process. All users should have induction training before using any of the cell culture suites housed in the school.

Cell Culture:

All workers involved in any form of tissue culture must observe the rules of good laboratory practice plus any extra safety rules associated with handling potentially hazardous cell cultures, viruses, eukaryotic viral vectors, hazardous chemicals, and radioactivity.

All new workers should receive instruction and training on the local rules of the facility and waste procedures in these rooms from their group's tissue culture representative or the curator of the facility.

NEW Cell lines:

All new cell lines introduced into the laboratories are **recommended** to be tested before experimental work is started for the presence of mycoplasma and if positive must be disposed of or subject to special containment.

Kit recommended for Mycoplasma testing from **Lonza The MycoAlert PLUS Mycoplasma Detection Kit**.

Existing Cell lines:

Existing cell lines are **recommended** to be tested regularly for mycoplasma using the above-named kit. It is **recommended** that Cell lines should be discarded and replaced from frozen stocks at least every 3 months or, if not tested for mycoplasma every 3 months. The test results for your group This is particularly important within shared cell culture suites.

18.0 Containment level I Tissue Culture Procedures for access

- It is not only your Responsibility to "be safe", but it is your responsibility to ensure those working around you are "are safe" too.
- Make sure you know and understand the procedures for the use and disposal of reagents, chemicals, cells, and any potential hazard material.
- If you are unsure of anything, ask the Pi or Cell culture suite manager. Details of contacts should be clearly displayed in the facility or local safety advisors.

Door Access

- Door Access to Containment level I tissue Culture Suites is open during the day for all trained staff requiring access.
- Tissue Culture Facilities can only be used out of hours by competently trained staff not requiring supervision, door cards or access codes will be activated for out-of-hour use.

Lab Coats

- A clean laboratory lab coat must be worn at all times.

Cell Culture Cabinets

- Cabinets should be cleaned before and after use.
- Disinfect by swabbing with 70% alcohol.
- Swab items being taken into the hood with 70% alcohol, avoid creating any aerosols.
- Do not clutter up the Tissue culture hoods with unnecessary items as this disturbs the air

flow.

Samples

- Incubate dishes on labelled plastic trays or in boxes in the incubator to minimise spills of any hazardous material and contamination spread, also can identify user if problem occurs.

Waste

- Dispose of all sharps in Sharps bins.
- Aspirate off all media before disposing of plastics in autoclave bags.
- liquid waste container should have a suitable disinfectant to kill the organisms contained within the aspirator. Ensure the correct concentration is present after the addition of liquid waste. It is **recommended** that aspirators be contained within the hood.
- Solid hazardous waste, i.e., flasks, pipettes and universals should be put in the autoclave bags containing also the thick bag insert. These bags should then be tied (not tightly) with a cotton wool bung in the top to allow steam penetration during autoclaving and left in the waste container to be picked up.
- Non-hazardous waste such as empty media bottles or plastics just used for water, PBS or ethanol can be placed in the black general waste bins if deemed non-hazardous. Plastic wrappers and tip boxes can be placed in the black general wastestream as in general they do not require to be autoclaved.

Spillages

- All spillages must be disinfected and cleared immediately, inside the cabinet with 70% ethanol and outside the cabinet with a suitable detergent to kill the organisms.

Water baths

- Please switch off the water baths at night.
- Do not waste media by leaving in the water bath overnight.

18.1 Use of Containment level II Tissue Culture Labs

Over and above the rules that apply to the use of Containment level I tissue culture facilities the following additional rules apply to containment Level II laboratories.

Door Control and Access

- Only authorised personnel may enter the rooms.
- All staff should undergo appropriate training from designated staff prior to using the Containment level II facility. When this is confirmed as completed it should be indicated on the induction training sheets. The Risk Assessment for the proposed work in this facility should be submitted and signed off prior to the work going ahead. Users should read and sign the risk assessments before commencing work. Door access will be provided.
- Please ensure that the door is completely **closed** to comply with HSE regulations and maintain correct air pressure.

Lab Coats

- All staff entering the Containment level II room **MUST** wear clearly marked lab coats donating cell culture suite. Laboratory coats should be left outside the room.
- Remove wear clearly marked lab coats before leaving the room and store on pegs provided for the coats within these rooms; **THEY SHOULD NOT BE WORN OUT WITH THIS ROOM FOR ANY REASON.**
- Do not put cell culture lab coats in the general department washing they should be sent for autoclaving.

Tissue Culture Cabinets

- Should be used when there is the possibility of the production of aerosols.

Samples

- All procedures must be performed to minimise the production of aerosols.
- Open cultures must only be handled in the class II safety cabinets within these labs.
- All cultures should be kept in sealed containers in incubators, as explained above in Containment level 1 section.
- Any cultures taken from the containment level II laboratories must be transported and kept in sealed containers.

Waste

- All waste materials must be made safe before disposal, either by autoclaving or disinfection.
- For virus work, all liquid waste is collected in a beaker or similar vessel and decontaminated with 1% Virkon overnight; all plastic must be decontaminated with 1% Virkon overnight before being placed in the waste bags for autoclaving and all glassware must be treated similarly before being placed for washing.
- All waste bags should be placed in grey bins for autoclaving.
- Materials for autoclaving should be transported to the autoclave in robust, leakproof containers.

Spills

- Spills inside the cabinet disinfect and clean immediately using 70% alcohol, for virus spillage use 1% Virkon solution.
- Spills outside the cabinet, clean with Presept, 1 (2.5g) tablet per 140ml water for blood and tissue and 1 (2.5g) tablet per 560ml water for other cultures, fungal or bacterial contamination. (There is also a biological spills kit in the WWCRC available on each level containing granules).
- All accidents and incidents involving HG2 Biological agents must be recorded by the person responsible for the work using the University online reporting system. Also reported to the School/Building Safety Coordinator.

Animal Work

- Special authorization and training are required for any experiments involving animals, and the work must be carried out in licensed facilities. Academic staff supervising animal work are responsible for training and safety of their research workers. No information about animal research work in the University should be given to casual enquirers. Press and other enquiries should be referred to the Head of School. Respiratory Health Surveillance should also be undertaken. Information is available on the Occupational Health Website, who should be **contacted prior** to starting the work. Please inform the staff responsible for managing this list for the ICS of any additions or removals to keep this up to date. This list will be checked and updated in January each year to maintain the school records are correct. See also page 26 Occupational Health for this procedure.

19.0 Transport of Biological Hazards

<https://www.gla.ac.uk/myglasgow/seps/biological%20safety/transport%20of%20biological%20hazards/>

- Any groups transporting any biological goods out with the University should be aware of these points and requirements.
- Biological agents and hazards and genetically modified organisms should be safely and

- securely transported.
- Multiple containment layers should be used for transport of hazards.
- Use suitable robust containers and label accurately for internal transport in and between buildings and where necessary use trolleys and spill kits.

National and international health and safety, animal health and environmental legislation require employers to protect people and the environment against risks from transport of dangerous goods. There are complex national and international regulations on the control of transport by road, rail, sea, and air as well as import and export of dangerous goods.

Biological hazards are dangerous goods which include substances or articles containing them for the purposes of the safe carriage of dangerous goods.

Hazardous samples

- They are allocated to UN Division 6.2 - infectious substances and include biological products, cultures, genetically modified micro-organisms (GMMs), genetically modified organisms (GMOs) and medical/clinical waste.

Non-Hazardous samples

- If it is known not to contain infectious substances e.g., Cell lines that do not contain any infectious agents.
- If it only contains micro-organisms which are non-pathogenic to humans or animals or those which are unlikely to cause disease in humans or animals e.g., genetically modified micro-organisms (GMMs) which can be handled at containment level 1 and are not viral vectors.
- If it has been treated such that any pathogens present have been neutralised or inactivated such that they no longer pose a risk to health
- Exempt material
- Human or animal specimens where there is minimal likelihood those pathogens are present. e.g., blood or tissue samples.

Non-exempt material

- Cultures of micro-organisms infectious to humans or animals (**Category A** infectious substance danger to humans (UN 2814) or animals (UN 2900) or **Category B** Biological substance (UN 3373))
- GMM assessed as requiring containment level 2 or above (**Category A or B**)
- **Class 9- Miscellaneous Dangerous Goods under UN 3245 genetically modified micro-organisms** GMMs that do not meet the definition of an infectious substance, but are capable of altering animals, plants or microbiological substances in a way not normally the result of natural reproduction (containment level 1 handling precautions for laboratory work) e.g.: disabled retrovirus with non-hazardous insert, disabled baculovirus with non-hazardous insert, disabled adenovirus with non-hazardous insert. Cell lines expressing viral vectors would also fall under this description.

See later section on packaging requirements.

20.0 COSHH RISK assessment and Chemical Safety

SEPS website [link](#).

COSHH Risk Assessment [form](#).

COSHH – Control of Substances Hazardous to Health

A COSHH Risk Assessment form (link above) should be completed and held in the Laboratory **Appendix 8**

COSHH (2002) The Risk Assessment exercise for any activity is the key link to ensuring that we comply with legislation for safety at work. Written evidence, where appropriate, is the key factor in ensuring that there is a consistency of high standard across the department and that all staff and students are aware of and respond correctly to potential hazards.

COSHH 2002 requires certain factors to be taken into consideration when compiling a risk assessment. These are:

- The hazardous properties of the substances (i.e., the intrinsic property of that substance to cause harm).
- How it will be used
- The amount of the substance to be used.
- Information on health effects provided by the supplier (e.g., the material safety data sheet)
- The level, type, and duration of exposure (note particularly if the initial exposure is to a higher quantity of the substance prior to extracting a smaller quantity for use); i.e., stock to working solution.
- Activities such as maintenance where there is the potential for a high level of exposure.
- Any relevant occupational exposure standard
- The results of monitoring of exposures
- The risks presented by combinations of exposures to substances.

Remember, however, that not all work needs to be assessed in such detail. Only that which poses a **realistic foreseeable risk** to people needs to be assessed. If the quantities of a substance are tiny (i.e., even from the first moment of collecting the chemical), the hazard is small and therefore the risk negligible, the assessment need only record the substances involved. They will be used in accordance with the supplier's Material Safety Data Sheet and the conclusion that because the substances pose little or no risk, no further detailed risk assessment is warranted.

COSHH Hazard Categories

Can be classed into 4 main groups these can be numbered (1-4) or by descriptors of Hazard level:

Non-Hazardous Substances

Low Hazard Substances which can be handled in the general laboratory using accepted procedures.

Medium Hazard Substances which are Potentially hazardous but can be handled in the general laboratory using accepted procedures with extra precautions to avoid inhalation of and contamination by powder or aerosol.

High Hazard Substances which can only be handled in restricted areas according to written procedures which are agreed in advance. Chemical Carcinogen, mutagens, teratogens and "highly toxic" are included in this category.

20.1 Ordering of High Hazard Chemicals

Note any new chemicals that have previously not been used in the building, a risk assessment should be made before ordering, and if flagged up as High Hazard Risk, then the safety measures should be discussed with the Chemical Safety Advisor and set in place **before** this chemical is ordered into the building. Do not order more of these chemicals than you need, as sometimes disposal can cost more than the purchase.

High Hazard Register for carcinogens, mutagens, teratogens, and Highly Toxic chemicals

After completing the COSHH risk assessment any High Hazard chemicals need to be added to the High Hazard register for each building. These will be added to the school safety folder for each building and to the School Health & Safety folder on J- drive. This should include name of chemical, catalogue number and company ordered from, amount ordered, the date chemical arrived. Names of individuals who will be using the chemical, the risk assessment associated with this chemical (i.e., ref number). This should then be

updated when the substance is disposed of. Risk assessment and records should be kept locally in laboratories for inspection during safety inspections and the school safety audit.

High Hazard Chemical Storage

- High Hazard chemicals must be stored by each group in separate, clearly marked storage places (dedicated cupboard, dedicated boxes in fridges or freezers).
- A record must be kept of all incoming stocks showing date and amount (on the High Hazard chemical register on the ICS Health and safety folder for each building in the J- drive). This record must also be kept updated with the disposal of this chemical showing the date the chemical was completely disposed of by the method described in the written procedures.

Using Chemicals

- We required by risk assessment balances to be contained in fume cabinets. To weigh out cytotoxic chemicals this must be carried out in line with the COSHH AND RISK ASSESSMENT and with be required the fume cabinet to have high filters fitted.
- Please make sure any chemicals left in the fume hoods for future disposal are **CLEARLY** labelled with chemical and name of person and group responsible.

21.0 Chemical Signage and Use of Chemicals



Warning
toxic material

General: wear gloves

Weighing: If possible, avoid weighing fine powders and volatile chemicals on an open balance. Wherever possible open the bottle in fume hood and add water directly to it. Protect third parties by clearing up any spills after yourself. Organic waste should be accumulated in a glass container (Winchester) and should be regularly emptied into the appropriate waste container in the outdoor chemical store. Chlorinated solvents should be kept separate from other liquids, or stored until a chemical waste pick up can be arranged through the University. **Contact your local safety coordinator for waste stream management.**

Toxic by inhalation H330, H331

General:

Precautions should be taken depending on quantities and toxicity of the compound. Small amounts may be handled on the bench. Larger amounts or more toxic should be used in a fume hood.

Weighing: Avoid, if possible, because of the dangers of spills in opened containers. Instead add a measured volume of solvent to a bottle containing pre weighed contents in a fume hood.

Solutions: Not generally hazardous, use in a well-ventilated room.

Highly toxic

General: You must handle over impervious surfaces which should be cleaned after any spills, as defined in your risk assessment.



Health Hazard: Pathogens/Mutagens/Teratogens H340, H341, H350, H351, H360, H361, H370, H372

General: Is your experiment necessary? If so, purchase the minimum quantities required and use the smallest amount you can. Take precautions as for highly toxic. In addition, teratogens should not be handled by any woman who is or believes that she might be pregnant.



**Caution
corrosive
substance**

Caustic H311 – H313

General: wear eye protection when handling concentrated solutions. Always add to water not the other way round.



Warning
Corrosive
substance

Very Caustic H310, H314

General: Wear eye protection at all times. Do not store more in the laboratory than you need.



Warning
flammable
material

Flammable H220 – H228, H240-H242, H250-H252, H260, H261, H270-H272

General: Beware of volatile substances with heavy vapors (e.g., ether or acetone) which can flash back. Make sure the room is well ventilated; use a fume hood wherever possible. Do not work with naked flame.



**Explosive
Material**

Explosive H200, H201, H202, H203, H205, H280

General: You must understand the nature of the hazard and take the appropriate steps to counter it. Read the manufacturer's instructions and consult your chemical safety advisor if required. **Explosive chemicals need to be reported and recorded for the School and University Annual Explosive returns for submission to Police Scotland.**

21.1 Storing Chemicals

- Store Chemicals as described by the supplier.
- Store hazardous and volatile chemicals in a fireproof cabinet
- Store acids separate from flammable solvents where feasible.
- Winchesters glass 2.5l bottles should always be transported using suitable carriers and never picked up solely by the neck.
- Check your stocks of chemicals regularly and dispose of any via the correct waste stream that are out of date or no longer required.
- Contact your local safety coordinator for information on the local chemical solvents storage facility for the school.
- Please make sure any stored chemicals are clearly labelled with their name appropriate hazard warning clearly identified and research group indicated. Do not leave chemical amounts to build up before disposal.

Chemical Spills

- There are several chemical spills kits available that can be used for chemical spills as appropriate.
- Formaldehyde and solvent granules spill kit (large green box) on level 2 room 232 and chemisorb spill kit granules for acids and alkalis spills available in the cabinets under the fume hoods on each floor (WWCRC). Spill kits in the POG are also available under the fume hood.
- In the external solvents waste store sand and granules are also available.

Chemical Accidents

- The PI /LINE MANGER and local SAFETY CO-ORDINATOR for the building must be notified of any accident involving a chemical carcinogen or other High Hazard chemical. This will be investigated, and a report sent to SEPS using the online reporting incident form.
- If a solution is spilled on an impervious surface, wipe up the liquid carefully with paper tissues, always working from the edge inwards. Place the tissue in a yellow sack for disposal. A chemical spill on a porous surface will generally necessitate destruction by incineration. Therefore, always

carry out operation on trays lined with paper.

- If clothes or shoes become contaminated with a chemical, they must be removed at once, and disposed of, hence the reason for wearing protective clothing.
- Skin contamination with a chemical carcinogen is serious and should never occur if appropriate protective clothing is worn. If it does occur immediately absorb as much of the contamination as possible on paper tissues, taking care not to spread further. Wash the skin with cold running water, then repeatedly with soap and water. Never use organic solvents, these spread the contamination and promote absorption. Seek medical advice and make certain the accident is reported.

21.2 Chemical waste disposal

Guidance from SEPS can be found in the following:

<https://www.gla.ac.uk/myglasgow/seps/specialistsections/specialistwastes/>

Water soluble Chemicals

- For non or low hazard risk chemicals present in small amounts (<100 g) washing them down the sink is a reasonable option. This disposal route is the most common method in the University for aqueous solutions of all chemicals. Very small amounts of hazardous chemicals (<1g) might also be disposed of in this way, but more thought is needed to the properties of the individual chemicals.

Organic Solvents

- Non-hazardous water miscible ones can be treated as described as above for water soluble compounds.

Water Insoluble chemicals

- Should be disposed of by placing in the chemical solvents store for disposal via an external contractor and the chemical and amounts recorded. The chemical store is location can be found by contacting your local safety coordinator.
- Please label any chemicals left for disposal along with their hazards and your name and group with accompanying duty of care form.

Hazardous Chemicals

- Use the documented route in the Risk Assessment, some will require disposal via an external contractor.
- **DO NOT dispose** of volatile toxic substances by evaporation in a fume hood. They should be disposed of via an external contractor.
- Any tubes / containers containing formaldehyde should **NOT** be sent for autoclaving, formaldehyde in small mounts can be disposed of by pouring down the fume hood sinks with copious amounts of water.
- The solvent store is also used to dispose of any waste solvents that require specialist disposal. There are various containers for designated disposal of chemicals. Please use the appropriate container and note the amount of chemical and what it is you have left for disposal for the records and inform the chemical pick-up company of the types of waste for disposal. Chlorinate solvents should be kept separate from non-Chlorinated ones.
- There is also an area for miscellaneous waste disposal, again note what you are leaving for disposal on the form in the store, and amount.
- Forms to arrange chemical waste disposal are available on the SEPS website. This is currently carried out by Tradebe who are the University approved supplier for this service.

21.3 Contacting the Supplier

Tradebe

All contact should be made using the following contact routes:

Tradebe UK
Atlas House
Third Avenue
Globe Business Park
Marlow, Buckinghamshire
SL7 1EY

M: +44 (0) 7837 123 668

E: jason.ratcliffe@tradebe.com

W: www.tradebe.com

The University has awarded them the contract for the disposal of:

- Chemicals
- Items contaminated with chemicals including paper, HEPA filters and equipment
Miscellaneous laboratory waste.
- Solvent Waste.

21.4 Liquid Nitrogen



Liquid nitrogen at -196 degrees C is kept in double-walled steel vessels specifically designed for the storage and transport of cryogenic gases.

When dispensing quantities necessary for handling cryo-preserved materials, or for cooling purposes, or when transferring liquid nitrogen from one container to another, observe the following rules:

- Work in a well-ventilated area. Always obey alarms and use portable O₂ sensors when provided for internal liquid nitrogen work. You must vacate the Area Immediately the O₂ Depletion is activated and under no circumstance re-enter the room until the Alarm has ceased and the O₂ levels have returned to normal 20.9% O₂.
- Wear protective face-shield, thermal gloves, and a laboratory coat. Absorbent material close to the skin (e.g., gloves) should not be exposed to contact with liquid nitrogen. Do not wear open-toed shoes or sandals when working with liquid Nitrogen.
- Decant liquid nitrogen slowly, especially into vessels at room temperature since rapid vaporisation sprays cold droplets into the atmosphere until equilibration of temperature is reached.
- Containers, other than large storage Dewar's, should be of rigid polystyrene ('Styrofoam') or double-skinned metal construction. Do not use glass or plastic.

- 'thermos' flasks not designed for cryogenic gases, as there is an implosion risk from
- thermal shock during filling.
- Do not touch any non-insulated surface cooled to liquid nitrogen temperatures, as adhesion of the skin will occur. Handle all cooled objects with tongs or forceps.
- ALWAYS replace stoppers or lids, loose-fitting only - never seal vessels containing liquid nitrogen, as this could create a risk of an explosion.

Training:

All people who work with liquid nitrogen should be given adequate instruction about the risk of asphyxiation, cold burns and the other associated hazards outlined in Part I. Particular attention should be drawn to the insidious nature of the asphyxiation risk and to emergency procedure followed in the event of spillage. Effective training in the use of protective clothing and the equipment to be used in the handling of liquid nitrogen during normal operational work should be provided. All staff and students should be aware of the correct emergency action. This training might be included as part of the departmental induction program.

Contact your local safety coordinator if you have any questions regarding training.

Handling Liquid Nitrogen:

When collecting or dispensing liquid nitrogen two people must be present. It is School policy that this task must not be undertaken by a member of staff/student working on their own. Collecting and **dispensing of liquid nitrogen is not allowed out with normal working hours** unless with special permission and emergency procedures knowledge.

First Aid Treatment for Cold Skin Burns:

- Flush the area of skin with tepid water.
- Do not apply direct heat or hot water.
- Do not use a forceful flow of water as this can cause tissue damage.
- Move the casualty to a warm place and seek medical attention.
- If burn severe call an Ambulance.
- While waiting for medical attention, continue to flush with tepid water and remove any tight jewelry.
- Do not offer the patient hot beverages.

Transporting Liquid Nitrogen:

- Always use protective gloves provided as well as wearing a lab coat and no open toed shoes or sandals.
- When transporting liquid nitrogen only use designated Dewar's and flasks inspect these regularly to ensure there are no cracks or leaks, only use trolleys which are specifically designed for use with the particular Dewar/flask.
- If using an elevator under no circumstances travel in the elevator with the container of liquid nitrogen. One person should send the lift to the appropriate floor while another person waits at the floor which the liquid nitrogen is to be sent.
- Clearly mark the Dewar/flask with a sign warning liquid nitrogen do not enter lift this will warn staff/students in the event of the lift stopping between floors; if there are specific mobile warning gates for the lift, please use them.
- For further information please follow the link [Cryogenic substances](#) and click on the link for liquid nitrogen at the bottom of the page.

For guidance on cryogenic gases see [link](#).

22.0 Use of Radioisotopes: Local Rules

Radiation Protection Supervisors

Davidson/Wolfson Link/West Medical Buildings:

- Sarah Cumming (Sarah.Cumming@glasgow.ac.uk)

Bower Building:

- Joel Milner (Joel.Milner@glasgow.ac.uk)
- Craig Carr (Craig.Carr@glasgow.ac.uk)

Dosimeters

Davidson/Wolfson Link/West Medical Buildings:

- Sarah Cumming (Sarah.Cumming@glasgow.ac.uk)

Bower Building:

- Arlene McQue (Arlene.McQue@glasgow.ac.uk)

Purchase Authorisation

Davidson/Wolfson Link/West Medical Buildings:

- Sarah Cummings (Sarah.Cumming@glasgow.ac.uk)

Bower Building:

- Craig Carr (Craig.Carr@glasgow.ac.uk)
- Joel Milner (Joel.Milner@glasgow.ac.uk)

ARC:

- Laura Jenkins (Laura.Jenkins@glasgow.ac.uk)

The following section lays out the local rules for the handling of radioactivity in laboratories. A hard copy of the University's Radiation Protection Services "Radiation Protection Notes" must also be displayed. It is this publication along with the local rules that outline the procedures for handling radioisotopes.

Follow the [link](#) below for information advice and forms from RPS.

Registering to use radioisotopes:

All users of radioisotopes must complete a registration form as a user. The completed form must be returned to the Area Radiation Supervisor who will countersign and forward the form to the University's Radiation Protection Service. All new radioisotope users must complete and pass the examination for the [training course](#) run by Radiation Protection Services. Where a worker has passed a course.

Pregnant and Breast-Feeding Female Workers:

- Female workers who become pregnant must inform the University Radiation Protection Advisor in writing after becoming aware of their pregnancy, or if they are breast feeding. (THIS

INFORMATION IS TREATED IN STRICTEST CONFIDENCE; DETAILS WILL NOT BE DIVULGED WITHOUT PRIOR WRITTEN CONSENT).

- Once pregnancy is confirmed all efforts must be made to ensure that the dose to the foetus is <1mSv for the remainder of the pregnancy.
- For women who are breast feeding, extra precautions should be taken in the workplace to ensure that radiation levels are minimal.

Use of Unsealed Radioactive Material:

1. Risk assessments must be made for each process and reviewed and updated regularly. The risk assessment must identify the hazards and evaluate the nature and magnitude of the risks to which both workers and others could be subjected. All work activities must be registered with the local Radiation Protection Supervisor and the University Radiation Protection Advisor.
2. Ensure that the laboratory where the work is to be carried out is registered with the Radiation Protection Service (RPS) for radiation work, and that all sinks where radioisotope disposal will occur are also registered with the RPS. Prepare a separate waste bin, with radiation disposal bags, for the solid waste. If solid waste disposal bags contain high-energy emitters, ensure that they are well-shielded.
3. Prepare a bench area with Benchkote, absorbent side up, and radioactive marker tape for the work area. If screens are to be used, ensure that all staff in the laboratory, and not just the person handling the isotope, will be protected.
4. After the experiment, monitor and decontaminate all the apparatus used. Monitor all laboratory surfaces including the front of the bench and floor and ensure that they are not contaminated. Finally check for personal contamination, remove personal protective equipment, wash hands, and monitor them before leaving the laboratory.
5. The delivery of the radioisotope should always include 2 record cards marked with the isotope source code. Complete the top half of the cards, and immediately return one of the semi-completed cards to the local collection box on the wall outside the complex office 440 located on level 4, Wolfson Link Building.
6. All radioisotopes, including waste, must be recorded entering the complex no matter how small in quantity and even if it leaves the complex on the same day, it came in.

7. The experimenter must know the physical and chemical properties of the radiochemical in use and should guard against the unnecessary production of radioactive gases and aerosols.
8. Isotopes with activity of (37 MBq) activities of stock radioisotope solution should be dispensed in a fume cupboard in a radioisotope dispensary. Smaller activities of the least radiotoxic materials may be handled in a Supervised Radiation Area provided an area of bench is segregated for radioisotope work, covered with Benchkote, absorbent side up, and marked with a length of "radiation hazard" warning tape. All the manipulations must be carried out over a spill tray lined with absorbent tissue. Where there is any possibility of radioactive gas or aerosol being produced, the experimental system must be completely enclosed, and the whole operation carried out in a Fume cupboard with face velocity of 0.5ms. It is acceptable to use a newer low velocity fume cupboard with a face velocity of 0.3ms.
9. A laboratory coat (buttoned up) and plastic disposable gloves should be worn, and a radiation dosimeter should be worn at chest level. Other personal protective equipments such as lead-lined gauntlets or aprons should be considered as part of the prior risk assessment.
10. Monitor the apparatus used as the experiment proceeds and monitor the hands frequently.
11. Place all radioactive waste materials in the special receptacles provided.
12. If the work is to be carried out in the researcher's laboratory, and not in the radioisotope laboratory, i.e., the amounts to be used are below the handling limit.

Maintaining Laboratory Records:

It is a legal obligation for the user of the radioisotope to be able to always demonstrate the location of the full amount of the radioisotope. This requires records with a level of detail in excess of that covered by the card issued by stores. At any time, the amount of radioisotope remaining in the stock bottle, plus the amount recorded as present in any diluted solutions/aliquots/scintillation vials, plus the amount recorded as disposed in liquid or solid waste, must total the amount delivered.

Maintain detailed records for the isotope as follows:

- Post disposal record sheets by the solid waste bin and by the sinks designated for liquid waste. On every occasion of radioactive waste disposal, record the type of isotope, the amount disposed, the source code, the user, and the date.
- Label all diluted solutions/aliquots containing isotope with the source code and the date.
- Maintain a detailed record sheet for each source code, and on each occasion where radioactivity from that source code is used, record the amount of isotope used; where it moves to (i.e., to a diluted solution in the fridge/freezer, to solid waste, or to liquid waste); the user; the date; and the amount of isotope remaining in the stock bottle.
- Once the batch of isotope is all used, summarize the usage in the table on the second of the two cards issued with it, and return the completed card to the local collection point on level 4, Wolfson Link building.

- On the first few days of each month, complete a summary of the liquid radioactivewaste disposal for the previous month, and return it to your local collection point.
- The detailed records should be kept for 5 years.

Note that all recordings should be done in Mega-Becquerel's (MBq).

1 micro-curie(uCi) = 0.037 Mega-Bequerels(MBq).

Storage:

1. Label all fridges/freezers to be used for the storage of radioisotopes.
2. Store all radioactive material not in use in the safe or refrigerator designated for that purpose. Ensure that material is properly labelled, and that secondary containment is provided.
3. If storage of radioisotopes is in unlocked fridges and freezers in corridors, all radioactive material must be locked in a metal cash box.

Disposal of Radioactive Waste:

Radioactive waste must not be disposed of with any other laboratory refuse, but must be sealed in an appropriate plastic bag labelled with

1. the laboratory of origin
 2. the date of delivery
 3. the isotopes present
 4. estimated activity on the date of disposal and disposed in a bin provided for this purpose. Estimates of activity must be as accurate as possible. Syringe needles and pipette tips must be shrouded before disposal.
- Pre-printed labels are available from the radiation supervisor or from RPS office Ext 4471.
 - The solid waste disposal bags cannot contain more than 37MBq. Full bags should have clearly completed labels which are available from the radiation supervisor or RPS.
 - Collections of full bags of radioactive waste are made weekly on Tuesday afternoons from the Davidson Building loading bay. Waste is collected in drums located in the loading bay in Davidson Building.
 - Bins for radioactive waste are emptied on a weekly basis; however, 32P should be left to completely decay before disposing of container to solid waste.
 - Radioactive liquid waste may only be disposed of via the sinks designated for this purpose. Restrictions are placed on the total activity which may be discharged to drain each calendar month. It is therefore essential that all disposals be recorded in the log kept near each designated sink, and the cumulative total reported on a monthly basis to the Departmental Radiation Supervisor in your Division/ Building.
 - Non-aqueous radioactive waste (e.g., organic solvents) is particularly difficult to dispose of, so when designing experiments take care to keep this waste to a minimum. Where it arises unavoidably, it should be sent to the Radiation Protection Service for disposal.
 - Special arrangements exist for the disposal of radioactive animal waste. Waste that may putrefy on storage must not be included with the normal radioactive waste. The Radiation Protection Service will provide advice in each individual case.

Dosimeters:

- All radiation workers, on registering with RPS are issued with a dosimeter. This should be worn at chest level for the best effect. The dosimeters are changed every 2 months.

- Thermo luminescent finger dosimeters are available for use where 37 MBq activity of phosphorus-32 or other isotopes emitting penetrating radiation are being dispensed.

Use of Radioiodine:

- Chemical compounds containing radioiodine are particularly hazardous since there is a possibility of a release of free iodine which will volatilize and lead to an airborne contamination hazard.
- Moreover, an intake of radioiodine will concentrate in the thyroid gland, irradiating the gland at a high level. An information sheet giving details of the precautions which should be observed in the use of radioiodine is available from the [Radiation Protection Service](#).

Non-Ionising Radiation:

UV Sources

- UV sources can be found throughout the complex and are used for a variety of purposes from cell irradiation to transillumination.
- Eyes and skin can be burned by the use of UV transilluminator or Light Box in which ethidium bromide-stained nucleic acid can be visualized and bands on gels be manipulated. Always wear safety glasses, or goggles, unless the light box is shielded. Use a UV shield if you are manipulating a gel, as your face can be easily burned. When cutting bands; the wrist area, between gloves and lab coat is particularly vulnerable to a burn.
- When using bactericidal UV lamps enclosed within microbiological safety cabinets, hands and arms must be fully protected. There is no significant risk of burning with the use of non-bactericidal long-wave UV lamps.

Radiation Protection - Emergency Procedures

All radiation workers are expected to be familiar with the emergency procedures appropriate to their work area, however the following points should be noted:

- All accidents involving contamination of personnel must be reported to the Radiation Protection Officer, or Deputy, immediately. The area of spillage must be isolated and

- clearly delineated with radiation warning tape. If 32P or 125I is involved, the immediate area must be cleared of personnel. Contaminated clothing should be removed where possible and sealed in a polythene bag. The contaminated area should be decontaminated as soon as possible under the supervision of the Radiation Protection Officer. Every precaution should be taken to prevent the spread of radioactivity from the spillage area.
- In the case of combined injury and contamination, the individual should be sent without delay to the nearest accident and emergency unit, and the nature of the contamination given when dialing 4444. Someone who is conversant with its radiological implications must accompany the casualty.
- Spillages should be contained immediately, and, in the case of injury, another member of staff nominated to be in charge of the cleaning up process. Additional advice may be sought from:

Mr. Jim Gray, University Radiation Protection Adviser - 4471 or National Radiological Protection Board - (office hours) 440 2201 or (outside office hours 440 2436), or 24hr Emergency Service, (Abingdon) 01235 834590.

Sign off Sheet of Understanding

I have read the local rules and understand the safety controls and responsibilities to ensure I work safely.

NAME	SIGNATURE	DATE

23.0 Use of Pressurised Gases

Gas Cylinders

Large gas cylinders must be handled with care because serious injury can result from a cylinder toppling over and, for example, crushing a foot or breaking the cylinder's main valve. This can lead to an enormous release of energy and turning it into a lethal projectile.

- DO NOT ATTEMPT TO MOVE A CYLINDER WITHOUT A CYLINDER TROLLEY.
- Gas cylinders are color coded. Be sure to correctly identify the cylinder you want before using it. The correct reduction valve for the gas must be fitted to the cylinder prior to use. Do not attempt to do this unless training has been given.
- Never move a cylinder with its reduction valve still in place, as this greatly increases the chance of snapping the cylinder neck in an accident. Gas cylinders other than "lecture bottles" must be securely strapped to benches or walls using an approved fitting.
- When not in use, cylinders should be turned off, not merely at the reduction valve, but at the main cylinder valve as well (after which the gas in the reduction valve should be released).
- Ensure that there is an appropriate warning label on the external door of the laboratory.
- Ensure that the valve and regulator are free of grease.
- Care must be taken with oxygen.
- The use of Teflon tape (plumbers PTFE sealing tape) on the threads of cylinder regulators is ~~not~~ by the PSSR 2000 regulations.
- Note that using nitrogen or argon in confined spaces poses an asphyxiation hazard. Carbon monoxide is very toxic, and hydrogen and carbon monoxide are both flammable and can present an explosion risk.

- Regulator valves on gas cylinders have only a 5-year life span, please ensure that they are in date and are replaced in good time.

[Link to SEPS advice on Compressed Gases.](#)

23.1 Pressure Equipment

The Pressure Systems and Transportable Gas Containers Regulations 1989 cover all systems in which gas or vapour is contained at pressures greater than 0.5 bar above atmospheric pressure, including gas pipelines. Equipment with a pressure vessel in which the energy exceeds 250 bar litres must be registered with the university and be subject to periodic examination by an insurance engineering inspector. In addition, equipment covered by the above regulations must be certified as being suitable for its purpose by a consultant engineer before being used.

- Laboratory equipment, including pressure cookers and gas distribution systems, are included in this.
- The regulations do not cover vacuum or hydraulic systems.
- Includes autoclaves, compressed air generator systems and gas pipe manifold valves. (Estates and Buildings do not organise this work, it is up to the individual buildings to organise this with the Insurance inspectors currently Zurich Insurance, and there must be an inspection scheme in place and regular maintenance.

[Link to advice on Pressure Systems from SEPS](#)

24.0 Waste

Waste Streams:

- **Recycling**
Paper, plastics, cardboard: White and blue recycling bins in office and lab areas.
Glass recycling in outside bins.
- **General Waste**
Non-hazardous waste is not suitable for recycling. Black bags in bins in lab areas and small clear bags in bins office areas.
- **Hazardous waste**
Autoclave bags yellow bags, sharps bins (yellow, blue, and purple).

Waste Inactivation and Disposal:

- Waste should be properly labelled, safely handled, stored, transported, and disposed of.
- Waste should be properly inactivated using a validated means before disposal.
- Waste bags and sharps bins should not be overfilled.
- Dispose of waste safely using appropriate containers and correct waste route (e.g., waste bags or bins, sharps bins, hazardous or non-hazardous waste, biological, chemical, or radioactive waste etc.).
- Validation and monitoring of effectiveness is required to prove that the inactivation method works.
- Effective disinfectants should be available.
- Disinfectants should be suitable for the biological agents and hazards, genetically modified organisms, animals, and plants used in the work.
- Regular decontamination of surfaces of safety cabinets and benches is required.

In all cases the producer of waste has a legal responsibility to discharge their duty of care from the moment the item or substance becomes waste to its final destruction.

24.1 Colours and Disposal routes for University Buildings

Approved contractor is SRCL.

ORANGE	Infectious Waste Suitable for Alternative Treatment (not incinerated)	Hazardous Waste for alternative treatment (autoclave/shredding/landfill) May include Sharps but not those containing Pharmaceuticals / cytotoxic
RED	Infectious anatomical waste for incineration	Human anatomical parts that require incineration due to infection hazard
YELLOW	Infectious Sharps waste for incineration	Sharps containing infectious material
YELLOW	Sharps containing pharmaceuticals other than Cytotoxic	Sharps containing pharmaceuticals other than Cytotoxic
YELLOW	Highly Infectious waste for incineration	Waste from work that is not anatomical but requires incineration due to infection hazard. Sharps containing Pharmaceuticals
PURPLE	Waste Containing cytotoxic. or cytostatic contamination for incineration	Waste from Work that contains cytotoxic/cytostatic compounds. Cannot go for alternative treatment, must be incinerated
BLUE	Non-Hazardous medicines for incineration	Medicines. Cannot go for alternative treatment. require incineration.

24.2 Glass Waste Disposal

<https://www.gla.ac.uk/myglasgow/seps/specialistsections/specialistwastes/>

It is the aim of the University, where practical, to recycle glass. Glass for recycling should go in the outside glass recycling bins.

Pyrex and other high melting point glass:

- This type of glass, whether arising from a laboratory or other area, is **unsuitable for recycling** due to the high temperature at which it melts. Placing this type of glass into the recycling stream would result in the entire batch of glass with which it is mixed becoming unsuitable for recycling. It is therefore extremely important to ensure that these types of glass are not placed into the glass recycling bins. Provided it is not contaminated with any substance that would result in it being classified as special waste (i.e., hazardous) these specialist glass types can be disposed of in the general waste stream.

Glass from laboratory and other non-catering processes:

- Waste glass that is contaminated with hazardous materials, and is classified as special waste, must not be disposed through the general or recyclable waste stream. It may be possible to safely decontaminate the glass. If this is possible then the glass can be streamed for recycling or general waste (Pyrex). **Glass for recycling should not be placed into the containers used for mixed recyclable waste.** It should be deposited directly into the **dedicated glass collection bins**. If decontamination is not practicable then the glass must be disposed of as special (i.e., hazardous) waste. Further information on identifying special waste and on how to dispose of special waste is available on SEPS web site.
 - Make sure that all containers that you dispose of are completely empty.
 - When disposing of glass bottles or containers be aware of the statements on the label. If the label indicates that the content was hazardous, and you have ensured that the container is fit for disposal through the recyclable glass waste route, you should score out any part of the label that implies that it is hazardous. This may include the name of the material it has held and any hazard symbols that are displayed on it.
 - Used microscope slides may be disposed through the glass recycling route provided they are not Pyrex and any material (e.g., tissue sections, blood smears) that is on them is not hazardous.
 - General note on handling waste glass
- When collecting and handling glass for disposal you should ensure that it is suitably contained so as to avoid the risk of cuts and scratches to those dealing with it. In the case of non-hazardous glass, if it is not practical to immediately transfer waste glass to the relevant external bin, a robust collection container should be used for temporary storage. This container should be securely sealed prior to transporting directly to the external bin. Glass should never be placed in any bin where a bin liner is used if this liner is then removed and carried with no further protection being in place for the operator.

25.0 Electrical Safety

<http://www.gla.ac.uk/services/seps/a-z/electricalsafety/>

Mains Electrical Installation:

As a general principle, Estates and Buildings are responsible for the mains electrical installation within the building and any faults that you see on the mains system should be reported to:

DAVIDSON/ WOLFSON LINK/JAMES BLACK:

John Mc Dougall

John.McDougall@glasgow.ac.uk Ext 8447

BOWER Building:

Craig Carr Craig.Carr@glasgow.ac.uk Ext 5081

ARC Building:
Carol Anne Smith Carol-Anne.Smith@glasgow.ac.uk

Sir Joseph Black Building June.Sothall@glasgow.ac.uk Ext 6448

Garscube (Jarrett lab 260) Esha.Nitnavare@galsgow.ac.uk Ext 8579

They will put in a request to Estates and Buildings. This could include things like loose socket outlets, lights or sockets not working. Or a fault can be reported on the **Estates and Buildings Helpdesk**.

Portable Appliances:

- All portable electrical appliances will be tested as per the school testing regime, they will be tested by an accredited external contractor this will be arranged by Local safety coordinator as part of the school safety strategy for the testing of Portable Electrical equipment. [Link](#) to guidance.
- All electrical equipment should be inspected regularly to make sure that it is in a safe condition. ALL users should be alert to the risk from damaged equipment and should visually check equipment that they use regularly. This requires no special skills. The sorts of faults you may find are simple and obvious things like damaged cables or plugs or damaged equipment casings. If you find faults with equipment, **DO NOT USE** the item. Remove it from service and notify your **principal investigator or local safety coordinator of the fault**.
- **Do not use** electrical equipment in wet conditions unless it is specifically designed for that environment.
- Guidance on inspection follow [link](#).

Precautionary Measures:

- Ensure that portable appliances in use in the laboratory are in good condition.
- Do not use any equipment in a manner that breaches manufacturers' instructions.
- Select equipment suitable for the environment in which it is to be used. Remove as far as is possible any external hazards from the work area.

Redundant electrical equipment

- Where equipment is surplus to requirements but is in good condition/working order, you should attempt to transfer it to another College/School within the University (WARPIT can also be used).
- If this is not possible, or if the equipment is beyond its useful life, then it must be disposed of *via* the University appointed supplier for the disposal of WEEE- CCL North. Information on disposal procedures can be found on the SEPS web site.
- In all cases the equipment must be correctly decommissioned & decontaminated prior to transfer or disposal. Upon decommissioning & decontamination a 'Safe for disposal' notice must be affixed in a prominent place on EACH PIECE of equipment. This notice can be downloaded at: http://www.gla.ac.uk/media/media_292014_en.pdf
- Equipment should be assessed for biological, chemical and radiation hazards prior to repair. The equipment should be decontaminated as far as practical according to the manufacturers/supplier's protocol. The appropriate safety clearance certificate should be attached.

Check list for disposal: http://www.gla.ac.uk/media/media_292457_en.pdf

- All items including chemicals and biological materials have been removed.
- All internal and external hazard warning signs have been removed.
- 'Safe for disposal' sign has been attached to the equipment.
- Identifying labels or asset register PAT testing stickers are removed.

Equipment:

- In general, do not use any equipment unless you know the correct procedures for their use and safe systems of work along with any booking procedures. Most large or specialist pieces of equipment will be assigned a curator, who should be contacted for training prior to use.
- Please also ensure that you clean up any spillages that occur during use and report any faults or problems to the appropriate person. If you are untrained and use a piece of equipment and damage it, it is unlikely that the Insurance Company would be willing to support our claim.

Use of Equipment in cold rooms:

- Equipment used in the cold room must be PAT tested before use and when removed from cold room must be allowed to equilibrate to room temperature and any condensation that has formed on the electrics allowed to evaporate before further use.

Centrifuges:

- Centrifuges can be dangerous if not operated in strict accordance with the manufacturer's manual. Ultra and High-speed Centrifuges are maintained on an annual contract and rotors inspected annually. Rotors are very expensive; the life of a rotor can be extended by ensuring that it is washed out after use.
- Harsh disinfectants such as **DECON MUST NOT BE USED** to clean rotors. Any rotor defects or signs of corrosion must be reported to technical staff or the Safety Co-Ordinator for that building at once.
- In the event of a tube breakage or spillage occurring in a centrifuge whilst in operation the following procedure **must** be undertaken:
 - Shut down centrifuge power.
 - Leave the lid closed for at least 30 minutes to allow aerosols to settle.
 - Notify technical support staff.
 - Follow the School clean-up procedure avoiding harsh cleaning or harsh disinfecting agents.
 - Use appropriate disinfectant to render safe the biological agent in use at the time of the incident.
 - All accidents/ Incidents must be reported using the University reporting procedures.

Electrophoresis equipment:

- Electrophoresis equipment may operate up to 5000V and therefore incorrect operating procedures or equipment defects are very hazardous. Power must be switched off at the mains and power pack before connecting, disconnecting, or checking any part of the system.
- Electrical connections at the gel tank must be fixed and be provided with adequate shrouding.
- All switches, electrical connections, insulation, and enclosures must be suitable for their environment and working voltage.
- All equipment must be regularly examined by a competent person and any defects must be rectified immediately.
- Understand your electrophoresis equipment and its limitations, run strictly in accordance with the manufacturers/suppliers' requirements.
- If the system is to be run on a constant current, ensure there is an upper current limit set. There have been many instances of electrophoresis equipment catching fire in laboratories - check all systems carefully before every run.

- High voltage electrophoresis must not be run out of normal working hours. The high voltage electrophoresis systems must be monitored during operation.

Fluorescent Microscopes:

- If using fluorescent microscopy for the first time, obtain expert advice from trained staff within the building who will be able to provide or arrange training of this equipment.
- Never look directly at the light source (radiation hazard)
- Do not align the mercury source.
- Never remove the light protective acrylic shield from the confocal microscope (positioned in front of the light source)
- Never open compartments of the microscope
- Never remove objectives, or remove protective caps from empty objectives, or change the position of objectives.
- Never insert reflective objects into the emitted light path
- Never use another lens (eyepiece/ telescope/ magnifying glass etc.) to view the light emitted by the objective.
- If images of a navy-blue appearance are obtained, check immediately that the correct filters are in place.
- Never view the image unless the background is black in colour.
- Cease work immediately if there is an incidence of prickly eyes or headache and seek medical advice. Remember that the symptoms often appear sometime after exposure (as with sunburn) so check the filters or advise staff responsible for the equipment accordingly.

Sonicators:

- Generally, sonicators are used only for short periods of time but they can cause discomfort if protection measures are not in place. Unprotected sonicators can produce noise at levels in excess of those at which an employer is required to act:
- In this case action is, in part, in the form of an acoustic cabinet which when closed provides protection to those directly and not directly engaged in sonication and are sited in rooms away from general laboratory work. For these to work sonication **MUST** be carried out with the cabinet door closed.
- Those persons operating the sonicator should also wear the ear protection provided.
- Containers of solutions undergoing sonication should **not** be handheld as prolonged use can cause subsequent swelling and pain in finger joints. Standard practice – to avoid samples overheating, noise leakage and damage to hands, is to sonicate for short bursts of time (seconds) only, using a clamp and stand.
- It is a legal requirement that workers are not subjected to noise at or above 80 dB(A) over the whole working day nor to impulsive noise at or above 112 Pascal's peak pressure (under the Control of Noise at Work Regulations 2005).

Microwave Ovens:

- Use microwave ovens strictly according to the manufacturer's instructions. Do not try to operate an oven if the door is not fully closed. Liquids heated in a microwave oven can be dangerously superheated, and may boil up unexpectedly when picked up, causing severe scalding. Hot agar or agarose solutions are especially hazardous.
- Always wear thick water- and heat-resistant gloves when removing containers of liquids from a microwave oven and hold the container to avoid spilling hot liquid on yourself.

Water baths:

- *Legionella pneumophila* can establish itself in water systems where the temperature is between

20oC and 45oC, and in agitated or stagnated water.

- Laboratory water baths should be cleaned regularly, and a sanitising agent added to them such as Sigma Clean water bath treatment. (Which is provided in the tissue culture suites in the WWCRC).

Unattended equipment:

- If you are responsible for any apparatus which you intend to operate unattended or after normal working hours, a SAFE SYSTEM OF WORK MUST BE ESTABLISHED. This entails leaving detailed instructions beside the equipment of detailed actions to be taken, and the person(s) to be contacted, in the event of an accident involving the equipment.

26.0 Fire Safety

SEPS website link <https://www.gla.ac.uk/myglasgow/seps/firesafety/>

Fire represents one of the most significant risks both to the University's buildings and potentially to those within them. The University undertakes fire risk assessment of all its properties and has a range of procedures in place to manage fire safety both at a central level and in individual buildings. This includes procedures for routine testing of fire alarm systems, conducting fire drills and for training of staff.

26.1 University Fire Safety Policy

Actions on discovering a fire:

Sound the fire alarm by pressing the nearest fire break glass point; do not assume that this will automatically be linked to the gatehouse and security: 4444 or 9-999 (Gilmore Hill) 9- 999

Do not attempt to use a fire extinguisher unless you have received appropriate training and the fire is small enough to tackle.

Actions on hearing a fire Alarm:

The fire Alarm is tested every Week in any of the University buildings, please see local arrangements for the day and time for this in your building.

If at any time out with the test the fire alarm sounds, everyone must leave the building as quickly as possible using the normal evacuation routes. (These should have been explained to you during induction training). The gathering should occur at the Fire Assembly point, and NO ONE may go back into the building until the alarms are silenced and they are told that it is safe to re-enter. Assembly points are marked on signage throughout each building **ENSURE YOU FAMILIARISE WITH THE ASSEMBLY POINT FOR THE BUILDING WHERE YOU ARE WORKING.**

26.2 Training

As part of the E-induction the online fire safety course must also be undertaken and completed within 3 months of starting.

All staff should complete the on-line fire safety training hosted within Moodle at least once **every three years**. This can be found on the [Induction Hub](#).

26.3 PEEP (Personal Emergency Evacuation plan)

Assisted Emergency Evacuation information.

<https://www.gla.ac.uk/myglasgow/seps/specialistsections/firesafety/assistedevacuation/#d.en.2793>

27.0 Manual Handling

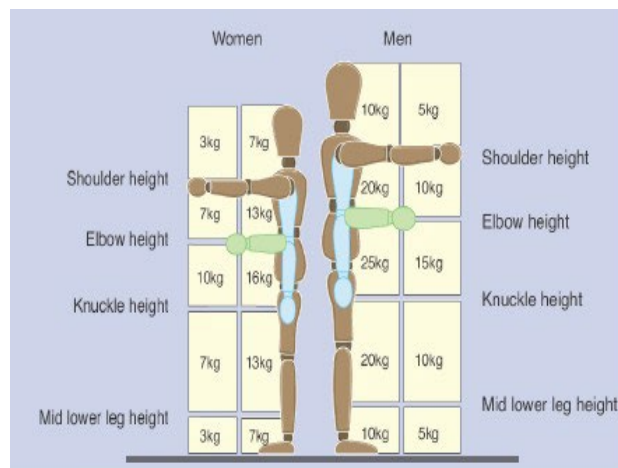
Guidance on manual handling from SEPS [link](#).

Introduction:

- Manual handling (lifting, carrying, and handling of loads) is one of the most common causes of injury at work resulting, typically, in muscular strains or physical injury. The management process required is a risk assessment. The starting point is to consider whether the manual handling task is necessary or if the work might be organised differently, or perhaps mechanised.
- [Guidance](#) on manual handling
- [Information](#) on Correct lifting techniques

Risk Assessment:

- Where manual handling is essential, a risk assessment of the task(s) must be carried out. Where the risk is low, assessments can sometimes be done generically, for example, by looking at a handling operation. However, where risks are higher, the risk assessments will usually need to be specific to the task.
- [Link](#) to appropriate form.
- [Link](#) to guidance on lifting.



Source: HSE Leaflet, Getting to Grips with Manual Handling

Figure 1

Trolleys:

Should be used to move heavier items or for moving items a longer distance. These should be available in your building for your use.

Handyman request:

<https://www.gla.ac.uk/myglasgow/estates/facilities%20services/>

This is run by the MVLS Facilities team and provides services for:

- Stores deliveries
- Handyman helps in various buildings.
- Driving
- Equipment removal and relocation

Please place an online job request if you require any of these services.

"Hot" Work:

<http://www.gla.ac.uk/services/seps/az/hotwork/>

Some building maintenance tasks may involve the use of equipment capable of igniting a fire. Typically, this is known as "hot" work. Any group organising any repair that might require this type of work should speak to the local Safety Coordinator first, to arrange a "hot works" permit via the estates helpdesk and arrange to disable any fire detectors in the area.

27.1 Training

- Staff members who are regularly involved in manual handling as part of their work must be provided with formal manual handling training and should also receive periodic refresher training. SEPS arranges Manual Handling courses.
- [Information](#) found on the training pages.
- Manual handling training is available on Moodle for all other members of staff who carry out minimal or infrequent manual handling tasks, i.e., office work, teaching etc. Follow this link to access Manual handling training and use your GUID to log into Moodle.
- For access use the enrolment key: ssbh01.

28.0 Transport of Biological Hazards

[Link](#) to SEPS

Classifying Biological Hazards:

[Link](#) to SEPS.

Biological Hazards and Infectious Substances:

The UN classification is UN class 6.2 infectious substances under the class 6 group. Infectious substances are defined as substances which are known or are reasonably expected to contain pathogens which can cause disease in humans, animals, or plants. The transport category must first be established to enable the correct packaging and labelling procedures required for the safe transport of biological hazards. Biological hazards are divided into the following categories for the purposes of carriage of dangerous goods:

- Category A Infectious substances affecting humans or humans and animals.
- Category A Infectious substances affecting animals.
- Category B Biological substances
- Genetically modified organisms
- Exempt substances
- Biological substances which are not dangerous goods.

Packaging requirements for transporting goods:

Packages should be clearly labelled with delivery address and senders' details.

Category A infectious substances:

(Either UN 2814 or 2900) should be packed to meet UN performance requirements. These are known as UN-type approved packaging for Class 6.2 substances, and they are certified and marked accordingly.

Should be marked with:



- The proper shipping name, e.g., 'INFECTIOUS SUBSTANCE, AFFECTING HUMANS' or 'INFECTIOUS SUBSTANCE, AFFECTING ANIMALS ONLY'
- With the appropriate UN number
- The appropriate warning labels.

Category B biological substances:

(UN 3373), packed using PI650, are not required to meet UN performance they are capable of passing a 1.2 m drop test.



Should be marked with:

- Biological substance Category B
- The appropriate warning labels.

Class 9 UN 3245 genetically modified microorganisms:

- UN approved packing is not required.



Genetically modified micro-organisms assigned to UN3245:

Should be marked with:

- UN 3245 Genetically modified micro-organisms
- The hazard warning label for Class 9

Non-dangerous biological materials:

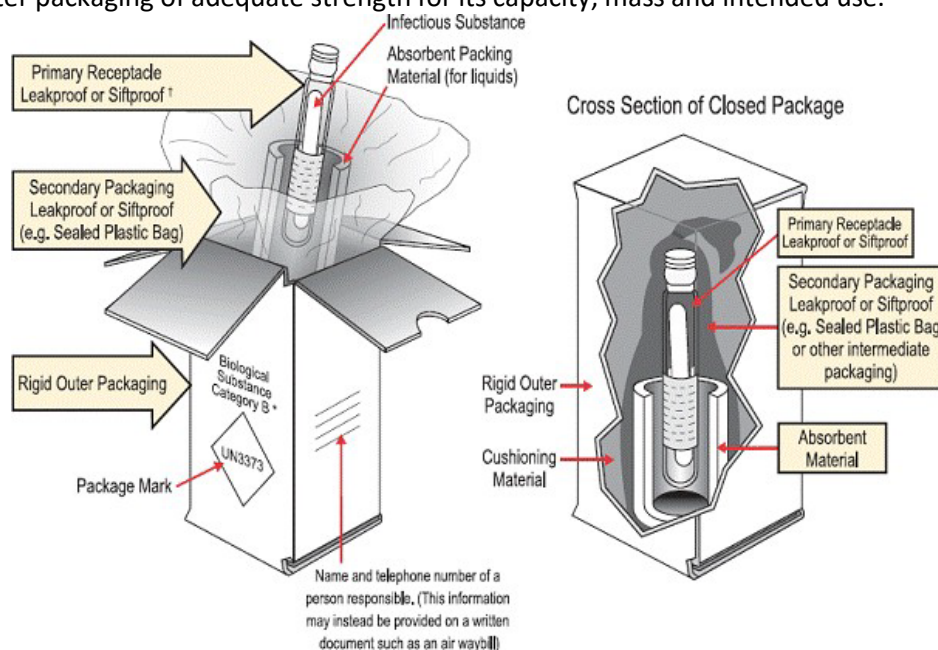
Non-hazardous or Exempt items

Must be transported in such a way that they are not likely to leak in transit and trigger safety/security alerts or cause unnecessary concern to anyone who may encounter leaked material.

The following is required:

The packaging must consist of **three** components.

- A leak-proof primary receptacle(s)
- A leak-proof secondary packaging and
- The outer packaging of adequate strength for its capacity, mass and intended use.



For liquids, absorbent material in enough quantity to absorb the entire contents must be placed between the primary receptacle(s) and the secondary packaging so that, during transport, any release or leak of a liquid substance will not reach the outer packaging and will not compromise the integrity of the cushioning material.

For refrigerated or frozen packages:

Ice packs or dry ice should be placed around the secondary packaging(s). **If dry ice is used to cool the materials it must be placed around the secondary packaging(s), and the outer packaging (including any over pack) must permit the release of carbon dioxide gas.** Dry ice must **never** be placed in either the primary or secondary receptacle as gas will build up and eventually these will explode with the potential to cause very serious damage.

Non-hazardous:

No labelling requirements.

Exempt:

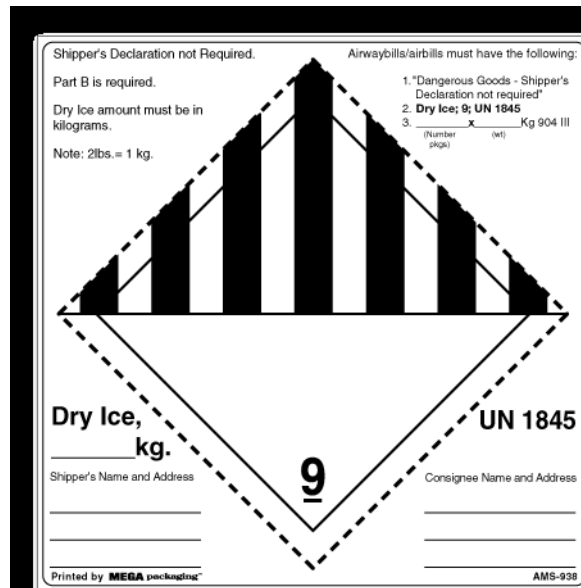
Should be labelled with:

- Exempt human specimen or Exempt animal specimen

Parcels containing dry ice:

Dry ice is classed as a hazard for transport.

- By road: add words “dry ice.”
- By air: UN1845 Dry ice
- Hazard warning label for Class 9



Sending goods by post:

International service **X** ALL Dangerous goods prohibited.

Domestic service **X** Category A and dry ice prohibited.

✓ Category B permitted (max amount 50g/50ml)

Can use Safebox™ from the royal mail.



Purpose designed secure packaging Pre-paid Suitable for: Category B materials.

29.0 Safe use of Sharps

Sharps can be:

- Needles

- Blades e.g., scalpels, microtome blades
- Other (medical) instruments that could cause an injury by cutting/pricking the skin.

Items such as glass coverslips, microscope slides, glass pasteur pipettes etc. can also be 'classed' as sharps.

A sharps injury is:

An incident which causes the above to penetrate the skin: a percutaneous injury. The sharp may be sterile or contaminated with, for example, chemical, radioactive, or biological material.

Risks from sharps injuries must be accurately assessed and effective control measures put in place before work begins. It is essential that this includes the action to be taken should a needlestick injury occur. Healthcare workers have specific duties placed on them, but these should also be practised where possible at UofG.

Safe practice:

- Avoid the unnecessary use of sharps. Needles, scalpels etc. are essential tools, but they should only be used where required.
- Where not reasonably practicable to avoid the use of sharps, safer sharps (incorporating protection mechanisms) should be used if possible.
- Needles must not be re-capped unless the risk assessment has identified re-capping is required to prevent a risk.
- Appropriate secure sharps disposal containers must be used and located close to the work area at a suitable height.
- Information and training on the prevention of sharps injuries must be given to all users.
- If injury occurs follow First Aid procedure (see First Aid and Follow Up section) – notify the relevant Occupational Health Unit/s (OHU) and Safety and Environmental Protection Service (SEPS). Incidents must be recorded and investigated.

What is the risk?

Of most concern in healthcare and human tissue work is the potential exposure to blood-borne viruses (BBV) namely:

- Hepatitis B (HBV)
- Hepatitis C (HCV)
- Human Immunodeficiency virus (HIV)

Or in the laboratory setting:

- Injection of chemical/radioactive/biological material
- Infectious agents
- Tissue from experiments
- Unscreened human blood

Who is at risk?

- Those who directly handle the sharps e.g., vets, doctors, laboratory workers.
- Cleaners/caretakers plus other staff, students or public (those put at risk when sharps are not stored or disposed of correctly)
- Human volunteer subjects in the laboratory

Control measures:

There is a higher risk of infection from hollow bore needles. Higher risk procedures include intravascular cannulation, venepuncture winged steel butterfly needles, needles and syringes and phlebotomy needles.

Safer sharps should be used for these higher risk activities where there could be exposure to human blood/ infectious material/ chemical/ radioactive/biological material which could cause harm.

- Avoid sharps use wherever possible and use safer needles.
- Use safety devices for high-risk activities.
- Do not re-cap needles unless risk assessment details this.
- Wear appropriate Personal Protective
- Equipment including sharps-resistant gloves if necessary.
- Change gloves after each patient/procedure
- Wash hands after removing gloves.
- Cover all exposed broken skin with secure waterproof dressing.
- Hepatitis B vaccination if work includes exposure to blood or human tissues.
- Safe disposal
- Information and training

Safe disposal:

- Always discard used sharps directly into an approved disposal container, immediately after use. Sharps disposal boxes come in many sizes, including small portable ones.
- Do not re-cap, bend or break needles/sharps. Wear suitable gloves when handling sharps. Use appropriate care and attention.
- Wherever possible, take sharps disposal box to point of use.
- Do not overfill disposal boxes. Close securely and change when three-quarters full.
- Sharps containers awaiting final disposal must be securely closed, labelled with the name of the person responsible for them, dated and stored in a secure location.
- Used sharps bins are classed as clinical waste and must have a clearly defined appropriate disposal route to incineration.
- Report all sharps-related injuries/incidents on a university accident/incident form once you have contacted OHU for advice.

First Aid and Follow Up:

If someone gets an injury from a sharp which may be contaminated:

1. Encourage the wound to gently bleed, ideally holding under running water. **Do not suck.**
2. Wash wound using running water and soap. **Do not scrub.**
3. Dry and cover with waterproof plaster/dressing.
4. Report to your placement supervisor/line manager and immediately go to A&E (at the placement location/closest hospital to the workplace).
5. Students on placement follow up with the placement OHU and inform UofG OHU the next working day. Other staff and students follow up with UofG OHU. Course delegates follow up with employer OHU or GP.
6. Report the injury/incident to Safety & Environmental Protection Service.

Contacts

Occupational Health Unit	Safety & Environmental Protection Service
63 Oakfield Avenue University of Glasgow G12 8LP	Isabella Elder Building University of Glasgow G12 8QQ
Tel: +44 (0)141 330 7171 Email: ohu@admin.gla.ac.uk	Tel: +44 (0)141 330 5532 Email: safety@glasgow.ac.uk