

Water and Environmental Research Group

Level 5 and Room 124 Environmental Engineering Lab

Rankine Building

CODE OF PRACTICE

The adoption and practice of good safety procedures is of paramount importance both for the health of fellow workers and for the integrity of the fabric of the laboratories in Environmental Engineering.

General Information

1. No work may be carried out in the Environmental Engineering Laboratories of the Rankine Building without the prior permission of, **Dr Stephanie Connelly, Dr Caroline Gauchotte-Lindsay, Professor Cindy Smith or Professor William Sloan**
2. No work may be carried out until all necessary safety documentation has been *prepared or read and understood and the local safety manual signed*. New staff and students should also make themselves aware of the positions of safety equipment in the various labs.
These are:
 - Emergency telephone number is **4444**
 - Fire Extinguishers (outside of the lab, prep lab)
 - First Aid kit (in the soils lab)
 - Eye baths (prep-lab area, next to the handwash sinks)
 - Safety goggles (prep lab)
 - Emergency Exit (in the 'soil teaching lab')
3. **Out of hours working:** Most of your work should be carried out while there is technical assistance in the laboratory: this is 8.00am to 5pm on a weekday. Any work outwith of these times requires discussion with Dr Stephanie Connelly, Dr Caroline Gauchotte-Lindsay, Professor Cindy Smith or Professor William Sloan and explicit permission must be obtained before out of hours running of experiments is undertaken.

Specifically:

To be allowed to work out of hours you must have gone through laboratory induction and essential skills training. You must also have been trained and signed off for specialist equipment if you are to use them.

Risk Assessment forms must be in place for all out of hours work and we may refuse out of hours working altogether for certain protocols (see the School of Engineering Safety website, www.gla.ac.uk/Engineering/Safety for details, the VPN may be needed to access the risk forms)

Working alone is not recommended if doing experiments requiring the use of a Bunsen burner. No one is to work alone when using hazardous materials or processes.

You MUST sign in and sign out both in the lab and in the foyer of the Rankine.

In general, out of hours working is between 10am-4pm on Saturday and Sunday, 7-8.30am and 5-9pm on weekdays. Work outside of these hours has to be truly exceptional and specifically approved by one of the laboratory PIs. You must put in place personal safety checks with your supervisor and one of the lab PIs if your supervisor is not one of them.

We reserve the right to restrict out of hours working for people who are found in breach of these rules.

4. All new staff and research students will fill in the safety documentation, which can be found in lab 531 and online <http://www.gla.ac.uk/schools/engineering/safety/>
5. Access to the main lab (level 5) is via a security coded door. Only trained personnel should have access to the security code. When the lab is occupied, the door should be left ajar so that access can be gained in an emergency. The door should be kept shut when the lab is unoccupied.
6. If anyone wishes to use new or additional procedures (biological or chemical) they MUST inform their supervisor or the lab. technicians of this BEFORE ordering any chemicals, biochemicals, microorganisms etc., or starting the practical work. A risk assessment form (aka COSHH form) must be completed using the School web-based database and approved by their supervisor. A hard copy of the risk assessment form should also be kept in laboratory and signed by all those involved in that activity. Also, people should e-mail others in the group if performing a new and particularly hazardous procedure.
7. Lab coats or other protective clothing, as required, must be worn at all times in the lab. Where necessary, safety spectacles must also be worn.
8. Long hair must be tied back when working with Bunsen burners or machinery with exposed moving parts.
9. Personal belongings such as bags and coats should be stored in owner's office or locker, not left on the open floor. Books and paper in the labs should be kept to a minimum.
10. No food or drink may be consumed in the laboratory.

11. If you find yourself following a possibly unfamiliar procedure or performing an experiment and are unsure of what to do next or if something is going wrong, seek assistance from somebody rather than end up having an accident.
12. All accidents or mishaps MUST be reported, preferably to one of the lab technicians, a supervisor or colleague.

Chemical Safety

1. Any work with solvents, corrosive chemicals, concentrated and moderate strength acids and alkalis must be carried out in the fume cupboard with safety glasses and disposable gloves worn. Used gloves and paper towels must be put into the normal waste bin.
2. Waste solvents must be disposed of into clearly labeled waste bottles located in the fume cupboard. As far as possible avoid mixing of materials, use separate containers for each solvent. A special waste uplift is arranged on an annual basis.
3. Organic solvents must NEVER be heated on the hotplate or in the autoclave
4. Acid should be disposed of in the fume cupboard as follows: Fill a large beaker with water then slowly add the acid to the water to dilute, and then pour the dilute acid down the drain in the fume cupboard.
5. In the event of an acid or alkali spillage on anyone immediately soak the affected area with copious amounts of water.
6. ALL containers, beakers, bottles etc. must be correctly labelled with owner's name, date and contents. Unlabelled containers or those not properly labelled will be thrown away.
7. All non-contaminated broken glassware, slides and coverslips must be disposed of in the waste glass box.
8. All sharps i.e. scalpel blades, hypodermic needles should be disposed of in the small sharps box.

Some guidelines for Good Microbiological Practice

1. Anyone working with viruses and other microorganisms must follow the guidelines set out in COSHH form.
2. Do not eat or drink or apply cosmetics in the lab.
3. Label cultures carefully and accurately
4. Wash your hands regularly and when ever leaving the laboratory.
5. Have your lab coat laundered regularly. Keep it in the lab. Don't wear your lab coat outside of the lab unless you are carrying biological materials
6. Clear our fridges and freezers regularly.

7. Cover any cuts or abrasions with a waterproof dressing.
8. Swab benches regularly with disinfectant e.g. 1% virkon or chemgene.
9. Transport biological materials in two layers of robust sealable containers (this will maintain containment if they are dropped).
10. Always ensure that supplies of an appropriate disinfectant at a suitable working dilution are available in case of contamination or spillages.
11. Cultures of micro-organisms must NEVER be pipetted by mouth.
12. Don't put contaminated pipettes down on the bench; release them tip downwards into a jar of disinfectant and completely immerse them.
13. 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.

Disposal of cultures and contaminated waste

1. An appropriate procedure for disposal of used cultures must be recorded in the COSHH assessment for any work with cultures or micro-organisms.
2. All microbiologically contaminated waste must be sterilized before disposal. Microbiological liquid culture waste must be sterilized by chemicals or by autoclaving.
3. Used disinfectant solutions must be washed down the sink with copious amounts of water (at least 20 times excess)
4. Contaminated glassware must be soaked overnight in an appropriate disinfectant, such as 1% virkon.
5. Contaminated plasticware: Pipettes, tips, petri dishes, cuvettes, test tubes etc. should be disposed of into the yellow "hard waste" drum
6. For work involving genetically-modified material, a GM risk assessment must also be completed. Anyone working with genetically-modified organisms should consult the COSHH form and dispose of biological material in autoclave bags, which should be sterilized at 121C for 15 mins prior to disposal.

Spillages and accidents involving cultures of micro-organisms

1. If your hands get contaminated wash thoroughly with soap and water.
2. If a tube, culture bottle or flask is broken, the contaminated area should immediately be flooded with disinfectant (1% Virkon) which should be allowed to act for 60 minutes. Stop all work in the area and post a warning notice. The area should then be cleaned up with paper towel and washed with water and allowed to dry. Broken glass should never be picked up by hand. Use forceps or a pan and brush and disinfect them after use. Waste paper must be put into the Biological Hazardous "soft waste" containers.
3. Contaminated clothing should be removed and autoclaved.

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 screw caps of universals
- Opening ampules
- Opening of snap-on actions e.g. closures on plastic containers or plug stoppers
- Any pipettes when transferring dilutions etc.
- Breakages of containers in centrifuges
- Accidental breakages
- Homogenizing by mechanical means (particularly at high speeds)
- Operation of centrifuges

Guard against excessive production of aerosols. Pipette carefully; avoid blowing bubbles or spray. When pipettes are rinsed e.g. between dilutions, or the contents are discharged into media or disinfectant, submerge the tip of the pipette and expel the contents gently, without blowing bubbles.

Working with imported soils

1. Floors and benches should have an impermeable surface which is easy to decontaminate. Virkon or Chemgene will be used to disinfect work surfaces after use and all equipment that has been in contact with the imported material.
2. Samples should be clearly labeled so that they are easily identified as imported material.
3. Soil is to be handled in a fume cupboard.
4. All waste material eg excess soil, pipette tips, gloves etc are to be placed in biohazard waste bins.

Bioreactor Lab (Level 1)

All safety guideline above apply, however this is a highly restricted area and only individuals whom have permission by Dr Stephanie Connelly, Dr Caroline Gauchotte-Lindsay, Professor Cindy Smith or Professor William Sloan may work and access this area. As well as COSSH, appropriate risk assessment should be performed when working in this lab.

Covid-19 Measures

1. Guidance from the Health and Safety Executive, UK Government and Scottish Government to manage the risk related to the Covid-19 pandemic must be applied to the Environmental Biotech Laboratory. These include physical distancing, frequent hand washing and hygiene measures, cough etiquettes and face covering in enclosed public space. Considerations for codes of practice and

risk assessment for the James Watt School of Engineering can be found here:
<https://www.gla.ac.uk/schools/engineering/covid-19protocols/>
https://www.gla.ac.uk/media/Media_728674_smxx.pdf

2. Physical distancing within the Environmental Engineering Laboratory means a maximum capacity of 5 people working in the laboratory suite on Level 5 and a maximum capacity of 1 in the Bioreactor Laboratory (Rankine Level 1, Room 124) at any given time. To ensure numbers are controlled, you will be granted access during specific slots agreed by the lab guardian and access is not permitted out with your agreed allocation.
3. To facilitate physical distancing markings will be placed on the floor at 2m intervals and the laboratory has been divided in 7 workspace zones (see Figure 1 in Appendix A). Prior to working in the laboratory you will agree your allocated work zone(s) by discussion with the lab guardian or Env Eng technicians. You must avoid crossing zones as far as possible - on occasion when you must do so, ensure you safely maintain distance from others.
4. Lab users must wash their hands regularly and wipe workstation surfaces, materials, and equipment at the start of their work and before leaving. At the end of each day, ensure you leave your work zones tidy and all tubes etc appropriately labelled for the event that you cannot return to work as expected and your station will require to be tidied by someone unfamiliar with the work.
5. You will be allocated a clean lab coat at the beginning of each working week - the lab coat must be worn at all times in the laboratory. When leaving the laboratory, you should store your lab coat in your allocated work zone for use for the full week. At the end of the week (or once soiled) you should deposit the coat in the lab coat laundry bin for cleaning. Spare lab coats will be available from technicians should your lab coat become soiled during the working week.
6. Access to the freezers in the Soils Laboratory will be permitted during 3 daily time slots only (presently 8:30-9:00am, 13:00-13:30pm and 16:30-17:00pm). You should minimise requirement to use these time slots by requesting technical staff to retrieve samples for you in advance. Should you require access to the Soils Lab for any other purposes this must be agreed in advance by liaising with the lab guardian or technicians who will seek approval Professor Simon Wheeler on your behalf.
7. Demand to use the lab will be managed by Dr Caroline Gauchotte-Lindsay the Laboratory Guardian, or in her absence, by Dr Stephanie Connelly, in collaboration with the School's Safety Co-ordinator. Weekly lab meetings will be used to facilitate communication between the different groups and establish lab use guidance - you must attend the lab meeting the week before your scheduled access slot. Impact on the overall capacity of the Rankine Building will be reviewed by the Technical Services Manager. Guidance will be updated regularly on Appendix A.
8. Emergency support (First Aiders and Fire Area Officer) might be constrained due to Covid-19 restriction on building capacity. Task risk assessments need to be reviewed to include the above measures and to review with personnel through the risk assessment, which work can be safely undertaken with reduced access to emergency support. A Covid-19 risk assessment template can be found here (https://www.gla.ac.uk/media/Media_723618_smxx.docx).

Final points for all labs.

1. Anyone storing material in fridge/freezers should try to keep this to a minimum; there is limited scope for long term storage. All material must be clearly labeled with the owner's initials, date and a brief description of the contents. ***The lab technicians have the authority to dispose of any material stored in fridges and freezers which is not clearly labeled.***
2. Keeping a minimum amount of paper in the lab reduces dust
3. NEVER mouth pipette, use the pi-pumps provided.
4. There is a booking sheet for shaking incubators – this should be consulted prior to using the incubators or changing temperatures.
5. There are booking sheets for the use of thermocyclers - these should be consulted prior to using the thermocyclers.
6. If any equipment breaks or is not working tell the level 5 person responsible (Prof Sloan or Dr's Connelly, Smith or Gauchotte-Lindsay) immediately.

APPENDIX A- PRINCIPLE OF LAB ACCESS- Covid-19

General Guidance

The new laboratory Code of Practice and the following guidance was prepared based on the UK and Scottish Government Guidance and the University of Glasgow (UofG) Generic Risk Assessment (GRA).

It is expected that everyone remains up to date with these documents during this time. This includes following best practices both in and out of the lab.

Scotland: <https://www.gov.scot/collections/coronavirus-covid-19-guidance/>

United Kingdom: <https://www.gov.uk/coronavirus>

University of Glasgow Generic Risk Assessment for Covid-19: for latest version <https://www.gla.ac.uk/myglasgow/seps/> (also available in your Lab Access pack)

Please read the Individual Risk Factor section, the Travel to Work section, the Work Environment section and the Work Task section, particularly “People working together in a shared area” and “People working closely on specific work tasks” subsections in the University GRA.

This guidance only covers Phase 2 of the ease of lockdown and will be updated as government advice changes and School-wide risk assessment evolves.

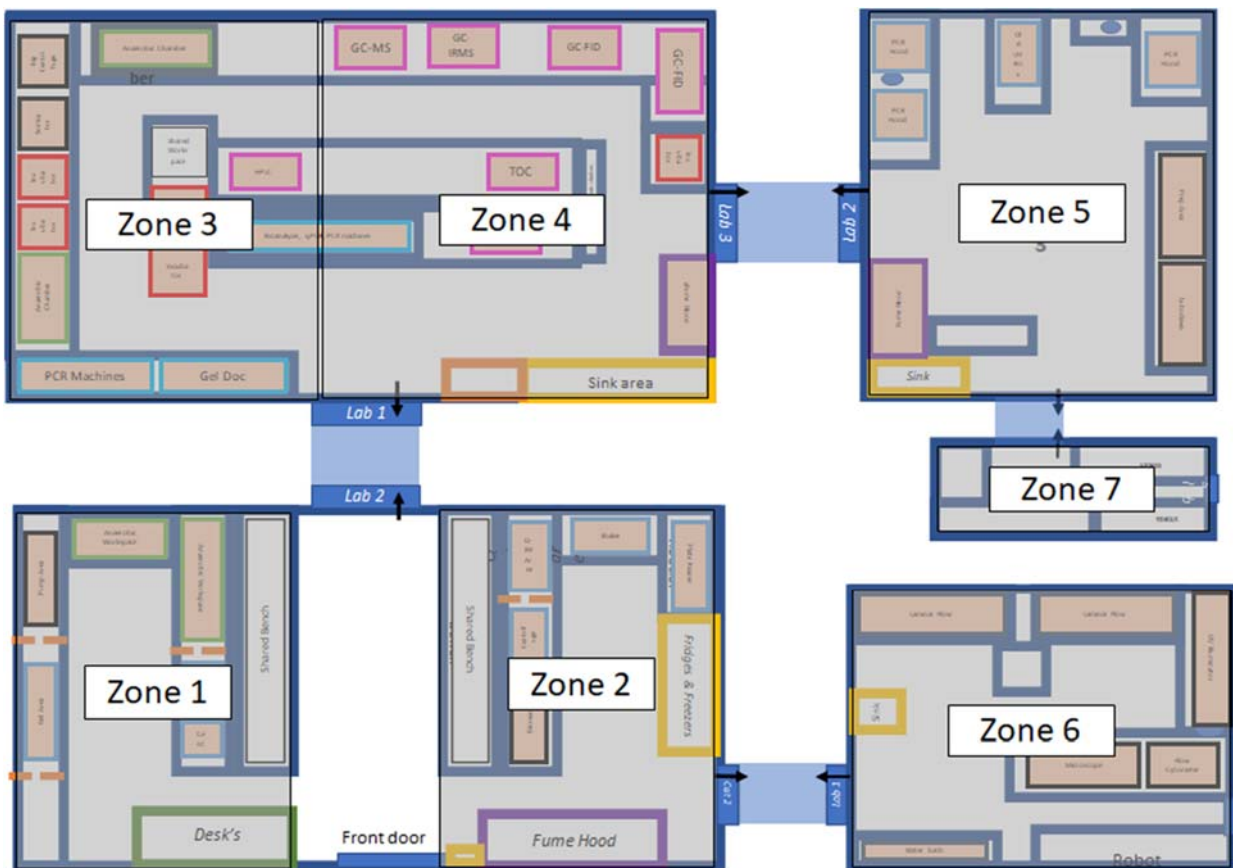
Researchers granted access to the lab be organised into teams of no more than 5 people.

At present, it is expected each team will work on a weekly rota with staggered entry and exit times. Access to the building will be controlled centrally through card access to the Rankine Building. In order to access the lab you must liase with the lab guardian or technicians at the weekly lab meeting one week prior to your allocated slot. This is to enable safe coordination of your work with that of others.

These practices might be reviewed once Lab Access needs have been established in each research group and will be updated in this document.

Social distancing (2m separation) within the lab will be mandatory. This will be promoted by dividing the lab into 7 workspace zones, and, by floor markings at 2m distance. You must minimise movement between zones and ensure distancing of others is respected:

- Zone 1 and 2 in the Front Lab for molecular biology and other wet lab work,
- Zone 3 and 4 in the Rear Lab for anaerobic or analytical work,
- Zone 5 in the Prep Lab for PCR reaction set-up and solution prep, and
- Zone 6 in the Cat 2 Lab for microbiology work and DNA extractions.
- Zone 7 in the microscopy room



In the laboratory in level 1 (room 124), there will be single occupancy.

Equipment will be rearranged to ensure related tasks can be completed within a single zone.

Use of the zones will be booked on either a half- or full-day basis (except for Zone 7) and should be decided amongst team members well in advance via the provided booking sheet.

Access to Zone 7 will be available at designated time slots for access to the freezer in the soils lab and for microscopy.

In Phase 2, lab access will be restricted to experienced lab users, and training on new equipment or techniques will not be allowed.

Access is restricted to the Level 5 Laboratory. Access to other labs, such as Level 6 or 8, will not be permitted, although technicians and lab assistants will be able to procure ice, etc. Offices will not be open for use, however, provisions will be made for securing belongings (details TBD).

Lab users will be required to go through University Induction on Moodle once it is available. Until then, lab users must read the information linked in Item 1 of the Covid 19 measures in this document prior to signing the Code of Practice.

As students and staff of the University of Glasgow, we will be operating under the honour system that everyone will follow the guidance correctly and communicate their needs both with their supervisor or LM and their team.

Version number	Author	Date	Summary of modifications
V01	Stephanie Connelly	02/07/2020	