



THE UNIVERSITY *of* EDINBURGH
Easter Bush
Science Outreach Centre

Easter Bush Science Outreach Centre

LAB MANUAL

Version 1 (March 2019)



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GENERAL INFORMATION

BEFORE COMMENCING LAB WORK THE PERSON/S RESPONSIBLE MUST TAKE YOU THROUGH:

- General working practices
- Risk assessments
- Safe System of Work/ Standard Operating Procedures
- Storage of hazardous chemicals
- Waste segregation and disposal
- Working out of hours
- Emergency procedures
- Accidents and incidents
- Fire alarms and evacuations

It is the responsibility of every individual to work in a safe manner. **Under Health & Safety Law you are responsible for your own health and safety and those who may be affected by what you do.**

For your safety, and that of others, report any breach of these guidelines to your line Officer. Persistent or serious malpractice is a disciplinary offence. Relevant health and safety literature can be found on the Health and Safety intranet site <http://intranet.roslin.ed.ac.uk/intranet/safety/>, which is accessible from any PC within the Institute.

SPECIFIC HAZARDS

LABORATORY CODE OF PRACTICE (CONTAINMENT LEVEL 1)

This Code of Practice should be read and understood by all persons working and entering the Easter Bush Science Outreach Centre which is listed as a Containment Level 1 (CL1) Lab.

1. Eating, chewing (including chewing gum), drinking, smoking, applying cosmetics/ lip salve, storing food or outdoor clothing, is not permitted in any Laboratory or prep-room. The cloak room can be used to store outdoor clothing and for drinking water.
2. All workers in the laboratory must cover cuts and abrasions with a waterproof dressing, tie long hair back.
3. Wash hands regularly and always before leaving the laboratory / prep Room.
4. Laboratory coats must be worn at all times whilst in the laboratory **if doing experimental work** and the risk assessment for the associated activity states that it is a required piece of protective clothing. Lab coats must be removed before leaving the laboratory /Prep Room and must never enter the cloakroom area.
6. Open toed shoes or sandals must not be worn in the laboratory when scientific work is being carried out.
7. Ensure that relevant training is received, completed to a competent level, and recorded, before use, for relevant scientific equipment.
8. The use of sharps should be minimised to as low as reasonable practicable. If sharps have to be used, then they must be placed directly into a sharps bin after use for safe disposal.
9. Latex gloves must not be used. Disposable gloves must not be reused. In the event of gloves becoming damaged or grossly contaminated the gloves must be discarded, hands washed, and new gloves put on. Policy on non-use of latex gloves: at <http://www.ed.ac.uk/schools-departments/health-safety/guidance/ppe/gloves-latex>
10. Blood and animal tissues must only be handled at clearly identified, designated work stations and trays used to contain spills.
11. All samples/containers/plates etc. , which contain Biological Agents/Pathogens must be labelled with the name of the Biological Agent/Pathogen, and the initials of the researcher/ lab worker.

12. On completion of work, the work area and any relevant equipment used must be appropriately disinfected and waste disposed of correctly.
13. All biological or chemical waste materials must be made safe before disposal.
14. Phones and headphones must not be used in the lab when work is taking place, due to contamination risk and also if wearing headphones you are not able to hear what is going on around you.
15. Following any spillage, it must be cleaned up immediately.
16. Accidents:
 - i) In the event of an accident resulting in a wound, immediately encourage it to bleed, wash thoroughly with soap and water, but DO NOT SCRUB. Cover with waterproof dressing.
 - ii) In the event of contamination of skin, conjunctivae or mucous membrane, immediately wash thoroughly. There are eye shower sprays available in the prep room.
 - iii) Accidents must be reported using the online Accident /Incident Form link below, entering the Health & Safety Officers email address jeni.temperley@ed.ac.uk and EBSOC officers email address Jayne.quoiani@roslin.ed.ac.uk
<http://www.ed.ac.uk/schools-departments/health-safety/accident-reporting>

**THE ABOVE CODE OF PRACTICE MUST BE FOLLOWED WHILST IN THE EASTER BUSH SCIENCE
OUTREACH CENTRE**

PERSONAL PROTECTIVE EQUIPMENT (PPE)

In addition to wearing a laboratory coat, additional specified **PPE** must be worn when performing certain procedures (e.g. gloves, safety glasses, face masks and shields etc.). Always wear shoes that cover the whole of your foot in the laboratory. Sandals, clogs, flip flops, platform shoes, high heels are not acceptable WHEN DOING LAB WORK. Please refer to the relevant SWW/SOP/RA to determine if additional PPE is required.

SAFE SYSTEM OF WORK FORMS AND SOPS

The SSW forms and SOPs relate to regulated procedures that are set in place by the Institute's Health and Safety department. Quality Management SOPs and institute policies are found on the Roslin Institute Intranet under "Quality Management"

<http://intranet.roslin.ed.ac.uk/intranet/quality/documentation-of-procedures-and-methods/>

All SOPs and SSW forms can be found in the associated folder. It is **imperative that you read the SOPs and SSW forms that relate to the procedures that you will be doing, along with their associated risk assessments.**

This will ensure that anyone working within the lab is fully aware of the risks associated with particular materials and procedures, acting to highlight risk minimisation strategies and protocols for dealing with disposal of waste and any spills.

RISK ASSESSMENTS (RAS)

No Risk Assessment = No Work

Many risks can be adequately covered by **common sense** however specific additional measures to reduce the level of risk may be required and procedures for documenting these are described below.

All equipment and appliances must be used as instructed. If in doubt, it is your responsibility to seek advice and help from the appropriate person, namely EBSOC's officer.

Where procedures require training, this will be arranged by your line Officer and documented by SSW/SOP forms with your signature.

Additional risk assessments may be required depending on the nature of the work. These risk assessments are completed on University based forms listed below.

GM-RA Form - Risk Assessment form for activities involving the use of genetically modified micro-organisms and eukaryotic cell and tissue culture systems.

COOSH Form - For low and high risk hazardous substances. To get the form and guidance follow the link <https://www.ed.ac.uk/health-safety/guidance/hazardous-substances/coshh>

BA1 Form - Risk Assessment form for work involving biological agents and/or material that may contain these.

RA1 Form - General Risk Assessment

MA1 Form - New and Expectant Mothers

MH RA Form- Manual Handling Operations Regulations

All original forms can be downloaded from the University's website <https://www.ed.ac.uk/health-safety/biosafety/forms/risk-assessments>

All work involving genetically modified organisms (GMOs) requires authorization by the Local GM Safety Committee **BEFORE** work can commence. Authorised GMRA's are held under the name of Group Leaders and it is your responsibility to read and sign the relevant GMRA before you commence work with any GMO. Please Contact a member of the H & S team.

Similarly any work in the lab of a chemical or biological nature, should have a risk assessment relating to COSHH completed **BEFORE** starting work.

All Risk assessment forms can be found in the RISK ASSESSMENTS folder, stored in the prep room. Electronic copies are also available at G:\Roslin_Communication_Group\public engagement\Easter Bush Science Outreach Centre\H&S\Risk Assessments

WORK WITH HAZARDOUS SUBSTANCES

Read the relevant risk assessment forms, Safety Data Sheet (SDS), COSHH and related SOPs and SSW forms before starting work - this will make you aware of the correct PPE to wear and how to deal with spills should they occur.

Weigh out all chemicals in a Weigh-Safe if available. There is one balance in a Weigh-Safe in the prep room. This is to limit contamination of you and the room. The Weigh-Safe must be left clean and it is the responsibility of the user to ensure that this happens. Be aware of creating hazardous dusts during weighing. *Note: a weigh-safe is only suitable for weighing out low hazardous compounds to control non*

harmful nuisance dusts e.g. some inorganic salts and other innocuous powders. For hazardous materials a fume cupboard or other LEV system must be used whilst handling hazardous substances. There are portable fume hood available for use in the Charnock Bradley Building, please contact the facilities team to organise the delivery of a hood to the EBSOC prep room.

Spills must be cleaned up immediately. Spills kits are located in the main lab, cupboard L1-2 under the sink.

Starting a new technique or introducing a new chemical/biological into an existing procedure may require a new COSHH-based risk assessment or at least a modification of an existing assessment; check before you commence work.

ASKING FOR ADVICE

If you are unsure about any matter relating to your work, **you must ask** your Line Manager or a senior member of the EBSOC team. Some questions may be directed to the Health and Safety Officer. Before starting any new procedure or using chemicals or equipment you are not familiar with, consult the designated SSW/RA EBSOC lab Officer to see whether a full risk assessment needs to be performed.

GENERAL HAZARDS

Hazard: Hazardous Chemicals - Use & Storage

Before using a listed hazardous chemical in the laboratory in any procedure it is your responsibility to become aware of the hazards associated with its use, recommended PPE, disposal routes, and action in the case of a spill/emergency. There is a large spills kit in the lab area, please ensure you know its location.

The above is achieved by consulting the relevant Risk Assessment, Safe System of Work form and any associated COSHH forms.

Hazardous chemicals should be stored appropriately in either the flammables cabinet, the Dangerous Chemicals cabinet or Acids cabinet (all located in EBSOC's prep room) See Fig 2.2 & Fig 2.3. If dangerous

chemicals require storage at 4°C or -20°C/-80°C, material should be kept within air tight receptacle of “modest” strength as to avoid breaking upon dropping.

Our most hazardous chemicals include:

+ Ethanol (flammable)

+ Sulphuric Acid (corrosive)

+universal indicator (flammable)

Hazard: Sharps

Risk: cuts

Examples: use of needles, broken glass, blades for cutting gels

Procedures:

- Open needles/blades must not be stored on shelf. Once they have been opened/used, place them directly into “sharpsafe” containers/bin
- Do not re-sheath needles: place directly into “sharpsafe” bin.
- Dispose of uncontaminated broken glass into glass bins (in prep room).

Hazard: Heat Source

Risk: burns

Examples: Portable Bunsen burner, ethanol flaming of loops, hot plates, PCR machine, microwave, superheated molten agarose.

Procedures:

- Never leave open flames unattended, turn off portable Bunsen burner when not in use;
- Do not transport flammables, e.g. ethanol, in open container (high **fire** risk);
- Allow solutions to cool before handling;
- Ensure all containers to have loose fitting tops prior to heating in microwave – **do not seal** any containers to be microwaved (this includes containers for melting agarose).

Hazard: Electricity

Risk: electric shock/burns to the skin

Examples: electrophoresis tank, all electrical equipment, light switches

Procedures:

- Do not touch electrical appliances with wet hands;
- Electrophoresis tanks must be covered with the correct intact operational safety lids provided when in use (i.e. DO NOT mix and match electrophoresis equipment or use damaged equipment);
- Use electrical equipment only as instructed;
- Do not use appliances which are/appear to be faulty or have external damage to cables;
- All faulty equipment (from light bulbs to scientific equipment) must be reported immediately to the EBSOC Officer (Jayne Quoiani) or directly to facilities..

Hazard: Manual handling & accessing objects at a high position

Risk: muscle strains/falls

Examples: moving equipment, obtaining or storing objects on high shelves

Procedures:

- Work in pairs when moving heavy objects; use the designated step ladder when accessing objects stored on high shelves. If in doubt seek advice from the EBSOC Officer.

WASHING & WASTE DISPOSAL

WASHING AND AUTOCLAVING

Many of the items we use can be washed by hand and placed on the drying rack in prep room to dry. Please keep this area as clear as possible and put away dried items in the correct cupboards when they are dry.

If the items need to be washed by CSU then make sure that EBSOC is clearly marked on the item in permanent marker pen and place it in the “for washing EBSOC” basin located in the prep room on the floor next to the door. When the items are returned they come back to the prep room, please put them away in their correct place.

If you require items autoclaved then please place a piece of autoclave tape over the opening (with or without foil depending on what you are autoclaving) and place it in the container in the prep room next to the CSU door. If the items have stickers on them, make sure that you write the temperature that they need to be autoclaved at!



Bins for biohazard bags, clinical waste bags and CSU washup basin

WASTE DISPOSAL

Method of blood and tissue disposal (Solids)

Any component (e.g. Stripettes, pipette tips, soiled dressings, Petri dishes etc.) that has come in direct contact with the aforementioned should also be treated accordingly.

Place solid waste in heavy-duty yellow clinical waste sacks at the point of generation.

Replace sacks daily or when 2/3 full; Swan-neck each bag and seal using a zip-lock 'insulock' identification tag.



Procedure for “swan-neck” tying of heavy-duty clinical waste sacks. * please note gloves should be worn

Place sacks in designated clinical waste plastic containers. Ensure each bag has the date, name/initials and EBSOC written clearly on it.

Method of blood disposal (Liquids)

Small quantities of blood can be chemical inactivated by treating with 1 HazTab per Litre overnight before disposal down sink with plenty of water. If you are disposing of large quantities please contact the Health and Safety team.

Method of disposal for sharps

Discarded syringe needles, microscope slides, coverslips, blades and any other contaminated disposable sharp instruments or items the following way:

- Place waste into rigid “Sharpsafe” containers
- Close the container when 3/4 full
- The lid is required to be securely attached but the flap (white flap) should be loosely sealed with autoclave tape (not clicked into place).
- Place the sharps bin in the designated waste plastic containers (in prep room)

Methods of disposal for biohazard solids

- All biohazard waste must be bagged
- Bags must not be more than 2/3rd full
- Lids and should be left on (e.g. culture vessels and plates need lids left so as not to expose CSU and others to hazards). Liquids can be autoclaved (but not hazardous chemicals) and should be

secured (via a bung, autoclave tape and/or parafilm) to prevent leakage. These are then placed into biohazard bags.

- Each bag should be loosely clipped with a zip-lock “insulock” identification tag. The tag should be tied to the first few notches only, this will leave a large gap at the neck to allow steam penetration during autoclaving.



Procedure for securing biohazard bags.

- All wastebags and “insulock” can be found in the red drawers (marked)
- All bags must have piece of autoclave tape affixed, labelled with a date, name/initials and EBSOC
- Bags should be placed in the designated plastic container at the Prep room door.
- Autoclaving will be carried out by CSU room staff.

Methods of disposal microbiologically contaminated Liquids

- All microbiological liquid waste must be autoclaved before disposal.
- Cover necks with aluminium foil and secure with unused autoclave tape and affix additional unused autoclave tape labelled with your name, date and EBSOC. Place flasks/containers in the designated plastic containers in the prep room.
- You must collect liquid waste you create in a designated collection receptacle filled no more than

half full (or preferably place it back into the already contaminated flask(s) outlined above). Receptacles containing waste should have their lid loosely attached as for autoclaving and loosely secured with autoclave tape, or in the case of flasks their necks covered with aluminium foil and secured with autoclave tape. You should affix additional unused autoclave tap with your name and lab number to the receptacle, or flask.

- Autoclaving will be carried out at by CSU room staff.

Waste acrylamide and agarose gels

Used wet gels (agarose and acrylamide) should be placed into the designated bin containing double bagged heavy duty clinical waste bags. When **half full, or on a weekly basis**, swan neck and tie using “insulock” identification tag. Place waste next to the waste area in the prep room for disposal- you must write on the bag that it contains agarose gels. Along with EBSOC, DATE and your initials.



Bin containing heavy duty clinical waste bags in prep room for disposal of used wet gels (agarose and acrylamide).

GENERAL WASTE

Any plastic wrappings, blue roll etc. can be disposed of into domestic waste (Black bin liner lined bins).

DO NOT PLACE GLOVES IN THESE BINS!!

Gloves should be disposed of in the biohazard or clinical waste bins as appropriate.

All glass waste, normal and “tinted” glass, intact and broken, should be disposed of by placing in the Glass disposal bins (under bench in prep room). Glass “Winchester” bottles obtained directly from suppliers that have contained non-chlorinated solvents can be air-dried (in fume hood) and placed in the glass disposal bins.

Plastic bottles obtained directly from suppliers that have contained non-chlorinated solvents can be air-

dried (in fume hood) or rinsed with water and placed in the orange recycling bin.

WASTE DISPOSAL - SOME IMPORTANT POINTS TO REMEMBER

All categories of waste will be rigorously monitored to ensure that staff adhere to the correct segregation and disposal procedures.

The zip-lock “insulock” identification tags are used to identify the Institute as the waste producer. Please always label waste with your **name, EBSOC and the date**. No other form of tying is acceptable. It takes considerable time and money to dispose of clinical waste. Please keep such waste to a minimum and **do not mix it with domestic waste**. Domestic waste is all other waste which is not clinical or special waste and should be disposed of into black bags or the appropriate recycling bins.

Heavy duty yellow clinical waste sacks, biohazard bags, sharps containers and “insulock” identification tags are available in the lab in the marked drawers (red drawers)

Lone working, First aid & Fire Action

WORKING OUT OF HOURS

There will be **no out of hours lab work in EBSOC**, and if there is any lone working during working hours please let the receptionist on duty know when you arrive and leave. Staff are considered to be at risk if they work alone in any area of the campus. So please ensure that any lone work carried out is done so safely and that all risks are minimised.

If the lone working creates a hazard above and beyond that stipulated in the original risk assessment then a new specific lone working assessment will be required to be conducted.

Out of hours: Before 8AM and after 6PM Monday to Friday
or anytime on Saturday or Sunday

If there is a workshop running out of the core hours (8am-6pm MON-FRI) you must complete the following forms:

1. Working Out of Hours - Health & Safety Declaration
2. Contact the security hub (6517351)
3. Lodge forms with HR before you commence out of hours work. Blank Forms can be found on the Roslin Intranet H&S site and must be signed by your line manager.

<http://intranet.roslin.ed.ac.uk/intranet/safety/>

When working out of hours, you are required to sign into, and out of, the out of hours work

ACCIDENTS AND NEAR MISSES

Accident: Any unplanned event which results in injury, ill health of people, damage or loss of property, plant, materials or the environment.

Near miss: Any event, which under slightly different circumstances, may have resulted in injury, ill health of people, damage or loss of property, plant, materials or the environment.

Emergency Contact details:

Reception 519000

Security 517351

First Aider- Jayne Quoiani 5196797

In the event of an accident and if you require emergency assistance:

- During working hours dial (519000) and request the receptionist to organise a first aider to be sent to you.
- If outside of working hours call Easter Bush Security on 517351 or Appleton Tower on 2222 and assistance will be provided. If you think an ambulance is required, please dial 999 (9 for external line).

Report all accidents, incidents and near misses using the online system AND to your line manager and EBSOC officer <https://www.ed.ac.uk/health-safety/accident-reporting> as soon as possible (immediately after treatment has been administered or the accident/near miss has occurred)

FIRE ALARMS AND EVACUATIONS

The weekly testing of the fire alarm system is every Friday at 12 noon.

The Roslin Innovation Centre is provided with a Category L1 fire alarm and detection system, incorporating automatic smoke and heat detectors and manual alarm call points, provided in all corridors and adjacent rooms. The building is provided with an evacuation lift and 1 evacuation chair. The main Fire Alarm Panel is situated adjacent to main reception.

In the event of an emergency requiring evacuation of the building, the standard procedure will involve the activation of the buildings fire alarm, initiating immediate evacuation.

ACTION TO TAKE ON DISCOVERING A FIRE:

- Activate the nearest fire alarm point, situated on all floors adjacent to escape stair enclosures and at ground floor exits.
- Dial the University Emergency Number 2222 (Security) from extensions on the 650/651 exchange. For all other telephones, dial 0131 651 3999 and advise of fire emergency.
- Evacuate the building via the nearest available escape route. Evacuation routes will be

designated using standard escape signage.

ACTION TO TAKE ON HEARING ALARM

- Immediately evacuate the building via the nearest available escape route. On the ground floor there is an exit at the end of the CSU corridor and there is another at the main entrance.
- Fire Action Notices are provided throughout the building. These notices indicate the action to take if discovering a fire or on hearing the alarm. All personnel should read these notices and familiarise themselves with the action to take.
- DO NOT USE LIFTS (unless required to use evacuation lift – see below).
- Do not stop to remove personal protective equipment (PPE) or collect personal belongings.
- Proceed to the fire assembly point situated at: **Roslin Institute Car Park**

FIRE FIGHTING EQUIPMENT

- Firefighting equipment is provided throughout the building in the form of fire extinguishers (outside EBSOC's ante-room and fire blankets (in the prep room)).
- Firefighting equipment should only be used by trained staff unless a fire is blocking your escape route.
- Instructions for how to use firefighting equipment are detailed on the equipment. All firefighting equipment should only be used for its intended purpose

RESPONSIBLE PERSONS

Health and Safety Officers	Jeni Temperley, Iain Kennedy, Walter Lowe
Fire Steward (EBSOC)	Jayne Quoiani
EBSOC Officer	Jayne Quoiani
First Aiders	Jayne Quoiani & Nicola Stock
Fire Induction Trainer	Jeni Temperley
Equipment service/breakdown contacts	Facilities team
Freezer maintenance	Facilities team
Central Services Unit (washup)	Facilities team

HEALTH AND SAFETY INFORMATION

Risk assessments: please see lab risk assessment folder

COSHH forms: Please see COSHH form folder

SOP/SSW forms: Please see SOP/SSW form folder

First Aiders: Jayne Quoiani 0131 6519679 and Nicola Stock 0131 6519421

If you have any questions, queries or suggestions about this laboratory manual please contact the EBSOC officer, Jayne Quoiani, via email eb soc@ed.ac.uk or phone 0131 651 9679