

Laboratory Safety Manual 2020



KEY SAFETY CONTACTS

EMERGENCIES

Phone extension

Fire / explosion

0909

First-Aiders

0909

Safety, Health, Environment (SHE) Office

Anne Harris: SHE Manager

5166

Colin Sandiford: SHE Adviser

0637

St George's, University of London emergency information line

0800 917 4415

NON-EMERGENCY

Angela Peterkin, SHE Administrator

5365

Laboratory Managers

Senior Lab Manager

Dr. Penny Lympny

1603

Lab Manager

Mr. Ian Connoley

5400

Lab Manager (CL3 labs)

Dr. Ariel Poliandri

5791

More contacts and information at [Safety, Health, Environment & Wellbeing website](#)

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Basic Safety

1. Before undertaking laboratory work, all staff and students should read the [University Health and Safety Policy](#)
2. Always use correct personal protective equipment (PPE) (clothing, shoes, eye protection, masks etc.) appropriate to the work/laboratory. This will be outlined in Risk Assessments and Local Rules associated with the work. Researchers must discuss these requirements with their supervisor before starting work.
3. Report any unsafe acts or conditions, including defective equipment, tools and work practices, to your immediate supervisor and if appropriate, the Safety, Health and Environment (SHE) Office.
4. All staff should be made aware of the protocol to be followed in response to the following incidents:

Fire – the procedure to be followed on discovering a fire or hearing the fire alarm is documented in the [University Fire Emergency Evacuation Procedure](#)

Injuries requiring first/aid medical attention- the procedure to be followed is documented in the [First Aid Procedure document](#).

Security breaches – in an emergency, individuals should dial extension 0909. For all other security queries, dial ext. 2841.

Damage to property/building – any damage should be reported to the Estates Helpdesk ext. 1234 option 2 or by email: estates@sgul.ac.uk.

Accidents, incidents and dangerous occurrences should be reported to your line manager and to the SHE office via the [accident, incident and dangerous occurrence report form](#).

5. Know the rules relating to [lone and out of hours working](#). **Note** that lone working is any situation when the individual has neither visual nor audible communication with someone who can summon assistance in the event of an accident or illness **regardless of the time of the day**. These rules are intended for those who may face higher risks than normal – for example working with hazardous chemicals,

biological agents or equipment where the work, while safe under normal conditions, could have serious consequences should an abnormal situation occur.

6. Before any work with hazardous substances, including solids, liquids, gases, asphyxiants and biological agents, carry out a suitable and sufficient COSHH (Control of Substances Hazardous to Health) risk assessment (see page 8 below).
7. Before working with radionuclides, individual groups are required to produce a risk assessment of the work that involves the use of nuclides and must also ensure that a radiation protection supervisor is in place. All projects must be registered with the SHE office. Further information can be found by referring to the [control of work involving ionising radiation page on the website](#).
8. Before any work involving genetic modification, you must receive written confirmation from the Biological Safety Officer for Genetic Modification that the activity can commence. For full details of the requirements, consult the [genetically modified organisms risk assessment page on the website](#).
9. Work with Hazard Group 2 and 3 pathogens, blood, or biological toxins, needs to be registered with the SHE office and reviewed by the Pathogen Management and Genetic Modification Safety Committee (PMGMSC)

Safety Induction For staff and Research Students

The following guidance is **obligatory** for new staff and research students at St George's, University of London. Established staff should complete any missing training as soon as possible.

All new staff must complete a [New Starter Induction Checklist](#). A separate form is available for [students](#). This may be completed by an appointed competent person with the new starter, but must be counter-signed by the PI/line manager.

Ensuring that a **laboratory** safety induction is completed is the responsibility of the PI/line manager. If you are a new student/member of staff and this has not happened appropriately, please discuss with your supervisor/line manager.

PI/ line-manager responsibilities:

1. PIs/ line-managers are legally responsible for the safety of the staff and students they manage, and should take a major role in their safety induction.
2. PIs/ line-managers should ensure that their new staff and research students follow their safety roadmaps (Appendix 1a,b).
3. In addition to making new staff and students aware of the University Health and Safety Policy and completing the appropriate new starter induction forms, PIs/ line-managers need to share/complete the following documentation with staff and students:
 - The local laboratory rules – these must be tailored to the laboratory in which the work is taking place. A template document can be found by following the [link here](#). A [guidance document](#) is also available.
 - Training records – a [template](#) for recording training is available
 - [Lone working guidance](#)
 - Guidance relating to the [use of electronic equipment in laboratories](#)
 - Your relevant Risk Assessments and/or COSHH Risk Assessments (page 8 & 9)

Note: Undergraduate laboratory project students have some core safety training provided by the University but research PIs and staff are responsible for ensuring that they are trained in the specific protocols needed for their projects, and that they **read and sign** any and all relevant risk assessments, training records and read the local rules.

PIs are also responsible for ensuring that they and their staff complete the mandatory training – **see below**. Line managers/PIs are therefore requested to keep a record of their staff and research students' training.

Mandatory Training

Appendices 1a and b contain **Safety Roadmaps** of training milestones to be achieved by staff and students month by month. Certain training modules have to be repeated at intervals by all staff:

- Fire Safety: online or face to face. Every 2 years.
- Display Screen Equipment (DSE) training (for computer users): online, once. Then DSE self-assessment (for computer users) once a year.
- General Health and Safety Awareness online, then every 3 years.
- Manual Handling (for those handling heavy objects): face to face or online, once, or every 2 years if this is a major part of your job.

Training courses are provided by the SHE team, face-to-face or online. To book a place on a face-to-face course, please contact [Colin Sandiford](#). The online training should be completed prior to starting work and can be accessed from the [Safety, Health, Environment and Wellbeing website training page](#). If you cannot access this using your usual login password, please contact [Estates helpdesk](#).

Records: please keep a systematic record of any training completed.

Risk Assessments

Risk assessments are a requirement under the [Health and Safety at Work etc. Act 1974](#).

“...think about what, in your business, might cause harm to people and decide whether you are taking reasonable steps to prevent that harm. This is known as a risk assessment. You are probably already taking steps to protect your employees, but your risk assessment will tell you whether you have covered all you need to.” (Health and safety made simple – the basics for your business. HSE publication.)”

The university has forms for different working environments; these can be found on the

University website.

Offices:

1. [General Office Inspection Checklist - \(SHEP 12\)](#)
2. [General Risk Assessment form, Non-laboratory](#)
3. [DSE \(Display Screen Equipment\) Self-Assessment Checklist](#)
4. [Risk assessment](#) for those mainly engaged in literature or data analysis and who may be working from home.

Laboratories:

For laboratories, risk assessments revolve around a method/task, so one is needed for each method used regularly in the lab. While it is acceptable to adapt a common risk assessment from another source, care must be taken to ensure that the risk assessment is relevant to the lab in which the work is taking place.

1. If your method involves the use of chemicals, biological materials or equipment that could pose a hazard (e.g. high speed centrifuges), then you must complete a [COSHH Risk Assessment](#).
2. If your method does not involve the use of chemicals or biological materials, then you must complete a [General Risk Assessment](#) form.
3. [Manual Handling Risk Assessment](#), needed if you handle heavy objects.

Outside St George's, University of London premises:

1. [General Risk Assessment form](#) - Non-Laboratory Community Studies
2. [General Risk Assessment form](#) - Overseas travel

Tips for Completing a COSHH Risk Assessment:

1. Begin with your protocol or method.
2. Read through and identify all the chemicals and/or pathogens used within that protocol.

3. Whilst reading, note any situations which might cause harm, e.g. equipment use, mode of transport.
4. Find the safety data sheets for the chemicals used, and identify which are harmful /hazardous. It is recommended that a printed copy for these is attached to the protocol. Care should be taken to ensure that the safety data sheet is the most up-to-date version.
5. Start to complete the COSHH form, remembering the summary evaluation.
6. Break your method down into appropriate chunks and look at the hazards and control measures associated with each stage/step.
7. Within the form input any harmful pathogens or chemicals.
8. Once completed, the form needs to be signed on the front* by the PI and everyone using the protocol in this laboratory (even if only once).
9. Keep together in a folder:
 - A paper copy of the form
 - All relevant safety data sheets
 - The method, protocol, or relevant SOPs (Standard Operating Procedures)

*** Note (2020):** If you already have a suitable COSHH assessment, reviewed in the last year, then you can use this if you add a front sheet signed and dated by the PI and users. At future renewals please use the updated University COSHH document.

Biological Agents

Definitions:

Biological agents are bacteria, viruses, parasites and fungi which can cause harm to human health. Cell cultures are also included by COSHH in the definition of a biological agent as they may be infected with adventitious biological agents such as mycoplasmas. Some cells lines may also be able to escape the immune system and form tumours.

A GMO is an organism in which new combinations of genetic material that do not naturally occur (whether derived from an existing organism or synthetically made) have been introduced and in which these sequences are capable of continued propagation. Plasmids and naked DNA/RNA sequences containing full viral genomes are also considered GMOs.

Disposal:

The disposal of biological agents, GMOs, blood and human tissues must be guided by specific risk assessments produced in each laboratory. As a general rule, doing the following will be sufficient:

Biological agents, GMOs, etc. requiring containment level 2 or above need to be inactivated by a validated means (e.g. autoclaving for solids and treatment with appropriate disinfectant for a predetermined amount of time for liquids) before disposal via an adequate route.

Based on risk assessment, clinical waste without chemical contamination can be processed through the orange waste route and clinical waste with chemical contamination should follow the yellow disposal route without the need for autoclaving. Biological agents used at containment level 1 may not require inactivation provided all of the following criteria are met:

- (a) Do not have the potential to cause harm to human health or the environment.
- (b) Must be biologically contained (e.g. possess multiple disabling mutations or restrictive nutrient requirements that cannot be met outside the laboratory).
- (c) Do not have the capacity to establish and multiply in the environment.
- (d) do not have capacity to transfer genetic material to other micro-organisms (e.g. non-mobilisable plasmid).

St George's, University of London requirements for work involving Microorganisms or Biological Agents:

The Pathogen Management and Genetic Modification Safety Committee (PMGMSC)

have set out guidelines available on the use of these types of organisms at St George's (Appendix 2).

Waste Disposal

Caddies for disposal of biological waste are located on all floors of Jenner Wing and on the 4th Floor of Hunter Wing. It is important that the following information is followed and that the different types of biological waste are not mixed. If in doubt, contact the SHE office or a safety representative for advice. Caddies used for biological waste should be kept locked and they should not be over-filled. Neither is it acceptable to place clinical waste bags or sharps bins beside or on top of a closed caddy – these items must be stored safely in your laboratory until you are able to put them in a bin. Please note that the signs above the waste caddies should be followed at all times. If a suitable caddy is not available, a new caddy can be requested by contacting the Estates Helpdesk on ext. 1234 option 2 or alternatively email: estates@sgul.ac.uk.

Failure to follow this advice could result in a caddy not being collected by the waste contractor. St. George's, University of London would be responsible for the decontamination and cleaning of the caddy.

Locations of waste caddies within Jenner Wing can be found here: [Basement](#), [Ground Floor](#), [Level 1](#), [Level 2](#).

Users should identify the most appropriate stream for their waste. Different waste streams may well be needed in the same laboratory.

Cytotoxic Drugs

Generally, **cytotoxic** means any chemical or reagent that can kill cells, while **cytostatic** means one that can stop cells dividing.

Cytotoxic drugs (sometimes known as antineoplastics) describe a group of medicines that contain chemicals which are toxic to cells, preventing their replication or growth, and so are used to treat cancer. They can also be used to treat a number of other disorders such as rheumatoid arthritis and multiple sclerosis. Once inside the body, their action is not generally tightly targeted, and they can produce side effects both to the patients and others who become exposed. Examples of cytotoxic drugs can be found [here](#).

Materials containing cytotoxic drugs should be disposed of via the cytotoxic (purple) waste stream. Toxic chemicals which are not used as medicines e.g. phenylmethylsulphonyl fluoride (PMSF) should **not** go into the purple (cytotoxic) waste stream.

Local Rules

Research groups are required to create “local” rules for Health and Safety in their specific laboratory areas. These rules should be informative, binding, and aligned with any relevant risk assessments and protocols.

The University has provided a [local rules template](#) containing rules for the whole site. It is a good and comprehensive starting point that can be modified to suit your needs, largely by deleting irrelevant sections.

This should be used in conjunction with the [local rules guidance](#) from the Safety, Health, Environment and Wellbeing web pages.

Local rules are divided into a number of sections:

1. **Introduction:** covers the scope of activities, explains the purpose of the local code of practice and the scope of activities covered, references other health and safety documents, summarises the significant findings of relevant risk assessments

2. **Area identification and description:** Identification and description of the area to be covered and the containment level required to control any biological agents being used or any special measures relating to other hazardous material.
3. **Hazards workers potentially exposed to:** A description of the nature and range of biological or infectious agents or chemicals to which workers might be exposed.
4. **Working practice to safeguard against exposure:** An outline of how workers are most likely to be exposed to infectious agents or hazardous materials (i.e. the risks) and the safe working practices required to ensure work is done safely.
5. **Rules of conduct in the area:** Local rules of conduct for workers and appropriate guidance for ancillary and maintenance staff, contractors and visitors.
6. **Emergency action:** Procedures for waste disposal and disinfection (routine and in the event of an emergency). Emergency procedures, including the procedures for dealing with accidents and incidents involving biological agents, and who should be contacted in the event of an accident involving an injury or infection.
7. **Housekeeping maintenance:** Procedures for the maintenance, examination and testing of equipment such as microbial safety cabinets, centrifuges etc.
8. **Health surveillance requirements:** Health Surveillance arrangements and immunisation policy if required, **to area / equipment:** A list of general procedures specifying which workers are authorised to carry out particular procedures.
9. **Training required:** Key training requirements for workers and training records demonstrating that training has been provided.

Visitors to St George's, University of London Laboratories

Many staff have visitors on site, for meetings, lectures, repairs or laboratory collaborations. We are legally responsible for their Health and Safety. Please see the guidance below.

1. Complete a [Visitor Registration form](#), available on the website, by 4 pm the day before the visit.*
2. They should sign in and out at Reception and wear a visitor's badge whilst on site. These will be issued by Reception staff.
3. Escort your visitor all the time they are on the St George's, University of London site.
4. Provide them with appropriate PPE (Personal Protective Equipment) if visiting laboratories
5. If visitors are on site to do contracted work over a few days, e.g. install and commission a piece of equipment etc., then they should undergo the Contractors' induction (approx. 20 min) with Estates and Facilities. This only needs to be completed once.

* If it is a last-minute arrangement, contact Reception on x5556 or x6499 with details of the visitor(s) (as per form) and who they are visiting, along with at least two contact numbers for Reception to call on arrival.

Leaving St. George's, University of London

If you are leaving St. George's employ, you must make arrangements for handing over work-related files and materials to colleagues before you go. You should refer to your institute manager for any other instructions. However, below are some considerations to note:

1. Your data and laboratory notes are the property of St. George's, University of London. It is your responsibility to make sure there is timely and full disclosure of your data to the lead researcher of the research project.

2. Staff should sort through materials and reagents in fridges, freezers and cupboards, discarding those that are agreed to be of no further use and organising those that are into containers or areas that are known to the lead researcher. Students should also go through the above process **BUT** they must do so supervised by the project supervisor.
3. Toxic or licensed reagents must be notified and disposed of under the guidance of the SHE office.
4. Staff should consult the IT department on the actions to take when leaving St George's, University of London with regard to emails, PI access to computer data, accounts and storage. Please see information contained in the [Leaver's guide](#).

Laboratory Inspections

The University has a program of mandatory laboratory inspections. Two inspections will be performed per lab each year, one by university appointed staff and one being a self-assessment.

Points to note

1. The inspections do not have a pass/fail outcome.
2. The purpose is to highlight institutional responsibilities as well as PI responsibilities.
3. Remedial actions must be completed by the PI or nominated individual. Dependent on the nature of the remedial action, contact either SHE office, estates office, or for serious issues Dr. Penny Lympny-Core Facilities.
4. Core Facilities and SHE staff will support PIs where necessary, with any further actions needed.
5. Your self-assessment should follow roughly 6 months after each official St. George's, University of London inspection.

How to complete a laboratory self-assessment

1. Download the [Laboratory Inspection Checklist](#) from the Safety, Health, Environment and Wellbeing Website.
2. Populate the document. There are drop-down menus as well as spaces for additional or helpful information. Please specify which laboratory/ area is being inspected
3. Populate the remedial action section, addressing any changes or actions that need to be made, and/or state in the “date completion required” box any mitigating responsibilities elsewhere. For example: if you need a remedial action because there are insufficient fire action notices nearby, it is reasonable to state that SHE/ Estates have been informed and requested to remedy this. Core Facilities and SHE staff will support PIs where necessary, with any further actions needed.
4. Email the completed inspection file to inspections@sgul.ac.uk. This inbox is monitored by Dr. Penny Lympny who will make contact in the event of any serious and high-priority remedial actions. All other remedial actions are to be addressed by the PI or research group members. Please feed back to the Safety Representatives Committee any difficulty or suggestions for the form, for future improvement.

Please contact your Institute/Directorate Safety Representatives if external remedial actions are slow to be resolved. Issues can be escalated to the Safety Representatives Committee for institutional action.

Appendix 1A - Safety Training Roadmap - For Research Staff

During 1st Year

New Starter

01

1. Complete the New starter induction check list within first 2 days (PI keep copy)
2. Read Local Rules (both general and room specific), sign training record/log
3. Apply for Hepatitis B vaccination (if required)
4. Read SAC newsletter
5. Read copy of Health and Safety policy
6. Read through Lone Workers policy
7. Read through Electronics in laboratories Policy (if applicable)

02

1. Complete online courses:
 - Fire safety
 - DSE users
 - General health and safety Awareness

03

1. Attend face to face university training: (PI keeps record in training records / log)
 - Waste training (if applicable)
 - COSHH Training (if applicable)
 - Manual Handling (if applicable)
 - Fire Safety (if applicable)

04

1. Workers should read and sign Risk assessments as appropriate to the workload/techniques/protocols to be used before proceeding with work. (PI keep old risk assessments as a demonstration of training received - even after Staff leave university)
2. As Workers shown how to use equipment / hazardous materials- sign training records /log (PI keeps records) (if applicable)
3. Complete a DSE form and submit to SHE Office

Annually

05

1. Complete a DSE form and submit to the SHE office(PI keeps record in training records / log)
2. Review risk assessment:
 - COSHH (if applicable)
 - General

Every 2 years

06

1. Attend Face to Face fire safety training (PI keeps record in training records / log) (if applicable)

Every 3 years

07

1. Attend COSHH training (if applicable) (PI keeps record in training records / log)
2. Manual Handling training (if applicable) (PI keeps record in training records / log)
3. General health and safety Awareness

Months

01

02

03

04

05

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07

08

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10

11

12

If a member of staff is a pregnant or a new mother, a risk assessment (New and Expectant Mothers Checklist) should be done - PI keep copy

Appendix 1B – Safety Training Roadmap for Postgraduate Students

During 1st Year

New Starter

01

1. Complete the Student induction check list within first 2 days (PI keep copy, give copy to student)
2. Read Local Rules, sign any training record/log (if applicable)
3. Apply for Hepatitis B vaccination (if required)
4. Read SAC newsletter
5. Read copy of Health and Safety policy
6. Read through Lone Workers policy
7. Read through Electronics in laboratories Policy (if applicable)

02

1. Complete online courses:
 - Fire safety
 - DSE users
 - General health and safety Awareness

03

1. Attend face to face university training: (PI keeps record in training records / log)
 - Waste training (if applicable)
 - COSHH Training (if applicable)
 - Manual Handling (if applicable)
 - Fire Safety (if applicable)

04

1. Students should draft, read and sign Risk assessments as appropriate to the workload/ techniques/protocols to be used before proceeding with work. (PI keep old risk assessments as a demonstration of training received – even after Students leave university)
2. As Students are shown how to use equipment / hazardous materials– sign training records /log (PI keeps records) -if applicable
3. Complete a DSE form and submit to SHE Office

Doctoral Students Only

Annually

05

1. Complete a DSE form and submit to the SHE office (PI keeps record in training records / log)
2. Review risk assessment: COSHH (if applicable) General

Every 2 years

06

1. Attend Face to Face fire safety training PI keeps record in training records / log) (if applicable)

Every 3 years

07

1. Attend COSHH training (if applicable) PI keeps record in training records / log)
2. Manual Handling training (if applicable) (PI keeps record in training records / log)
3. General health and safety Awareness

Months



If a student is a pregnant or a new mother, a risk assessment (New and Expectant Mothers Checklist) should be done - PI keep copy



Are you working with Microorganisms or Genetically Modified Organisms?

This is what you must do BEFORE you start! “The 4 Rs”

Risk Assessment

Register the project

Review and Record

Activities regulated by the Pathogen Management and Genetic Modification Safety Committee (PMGMSC)



Advice and contacts:

Safety Health and Environment (SHE) office:

GM Biological Safety Officer (BSO-GM):

Chair, PMGMSC:

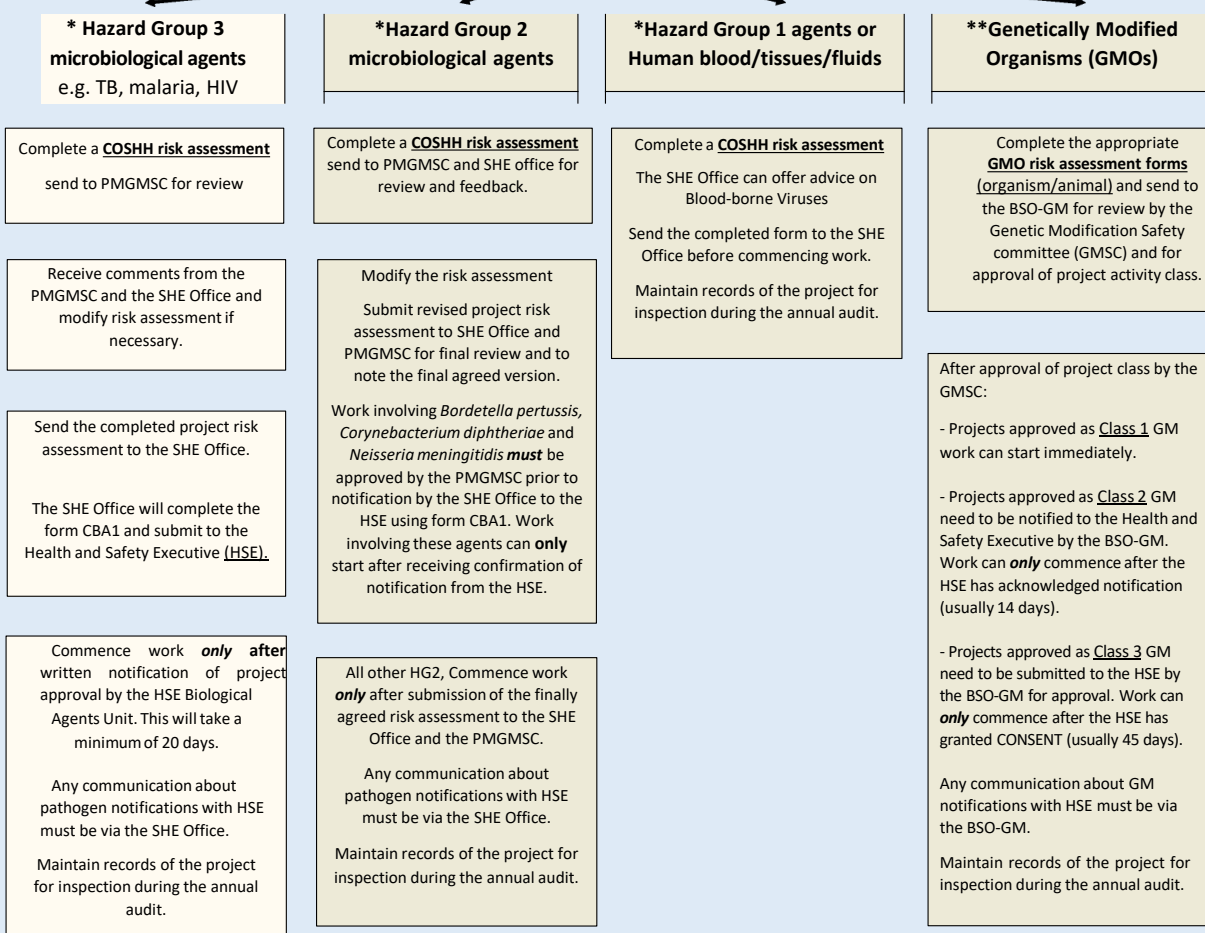
Dr Colin Sandiford - BiologicalSafety@sgul.ac.uk

Dr Ariel Poliandri - bsg-gm@sgul.ac.uk

Prof Philip Butcher - butcherp@sgul.ac.uk

All forms and necessary detailed information are available on the SGUL Health, Safety & Environment (SHE) web pages.

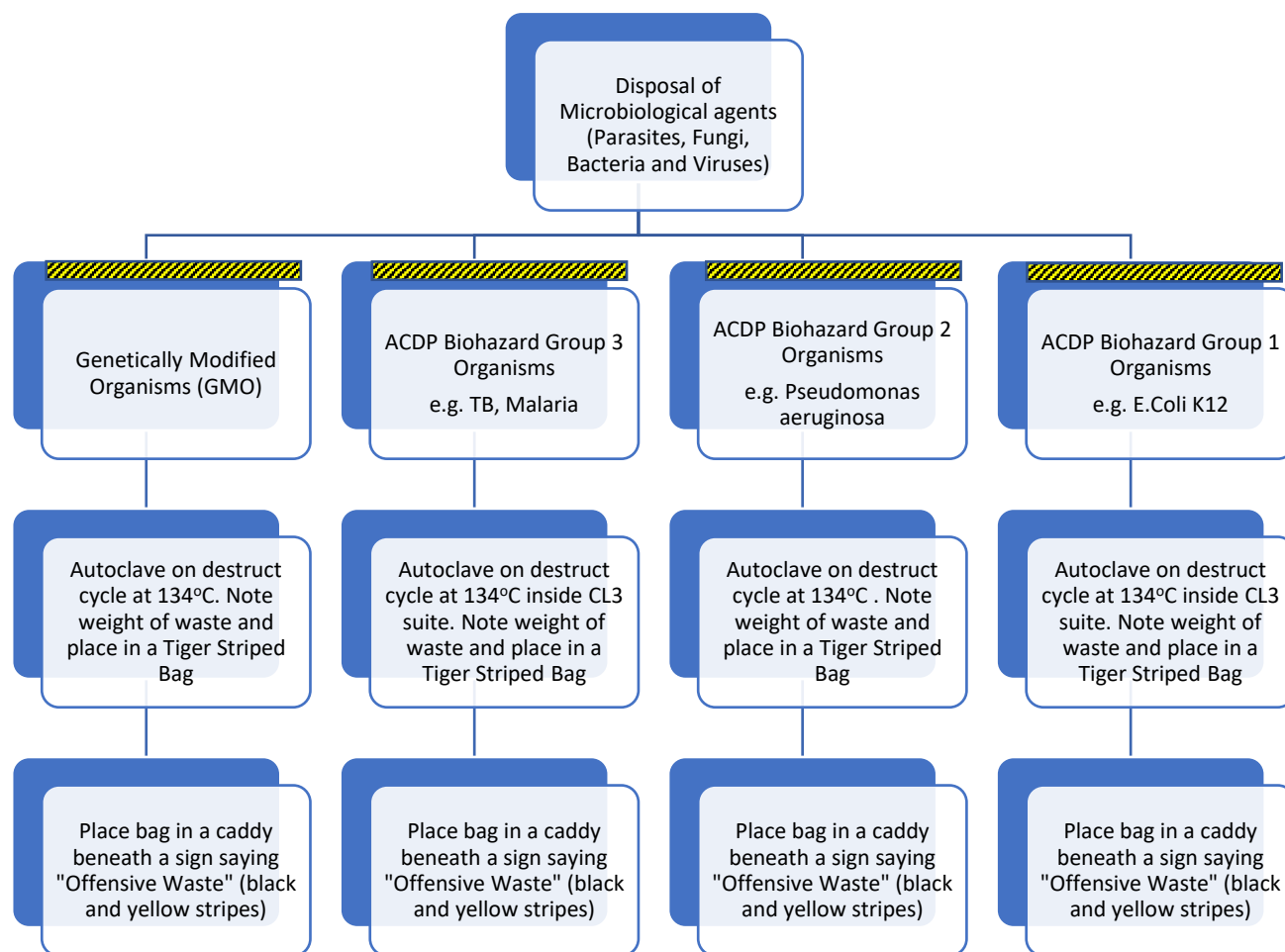
Your Action Pathways



* as defined by The Approved List of Biological Agents, ACDP.
** as defined by The Genetically Modified Organisms (Contained Use) Regulations 2014

Produced by PMGMSC and SHE Office in line with current COSHH and GM biosafety legislation, on the recommendation of the SGUL Safety Management Committee, September 2019

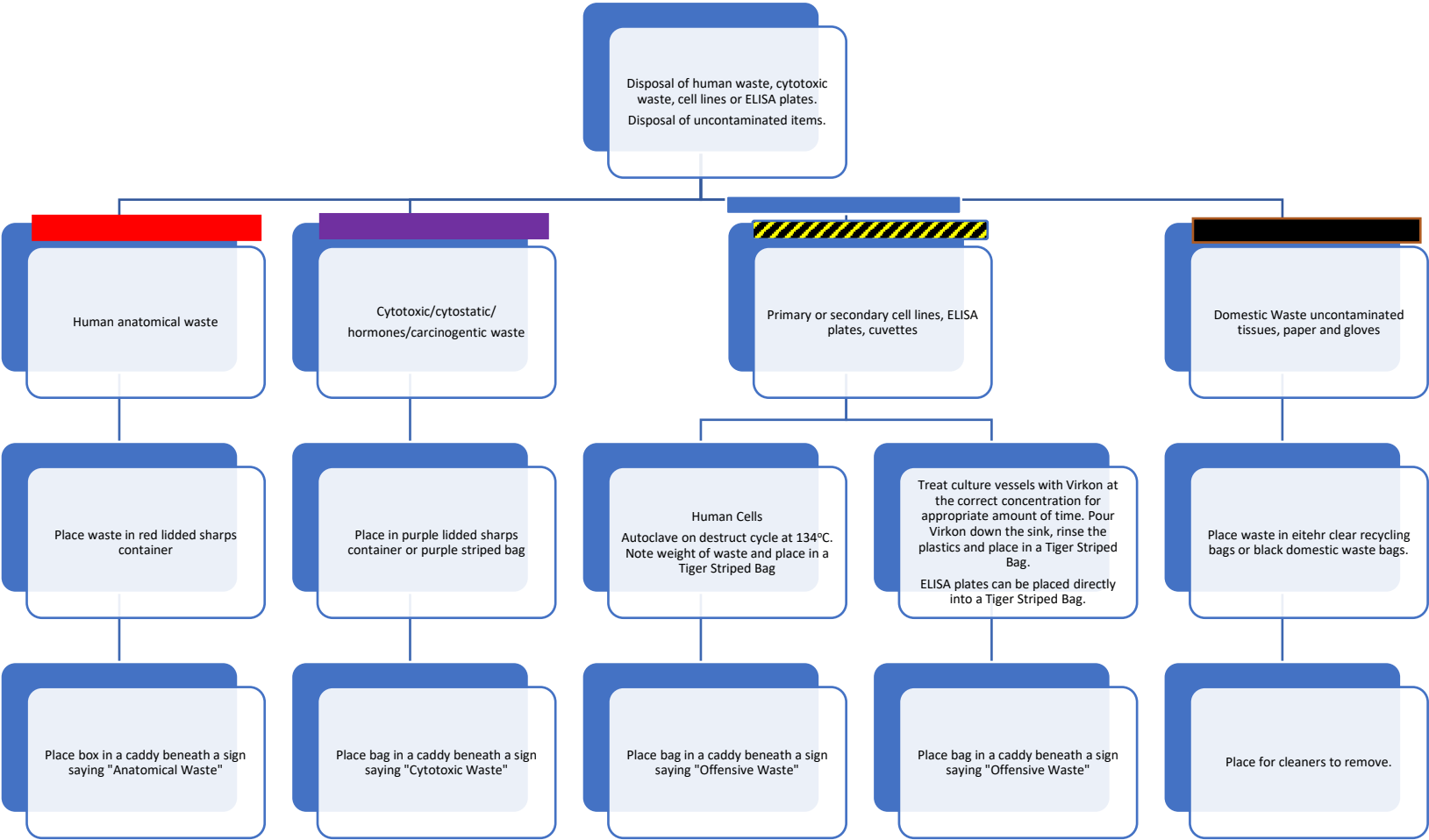
Appendix 3a – Laboratory Waste Disposal: microbiological agents



Offensive waste is waste that is considered to be non-infectious and does not require specialist treatment or disposal. Items that have been treated either by autoclaving on a destruct cycle or have been treated with Virkon, 10% Sodium Hypochlorite or strong bleach depending on the risk assessment can be disposed of directly into Tiger striped bags.

Scales are located in the main autoclave rooms. The weight of the bags must be noted on the waste declaration forms located near the autoclaves. The treated waste must be placed in a Tiger striped bag which must be sealed with the appropriate tag. The name of the individual sealing the bag should also be written on it.

Appendix 3b – Laboratory Waste Disposal: human waste, cytotoxic waste, cell lines and ELISA plates



Appendix 3c – Laboratory Waste Disposal: disposal of sharps

