

Biological, Toxin and Electrophoretic Waste Disposal Policy

1. Introduction

Working in laboratories entails the production of various types of waste some of which are hazardous e.g. biological and chemical agents. Disposing of this waste in a safe manner is an important part of laboratory work.

2. Policy aim

The aim of this policy and the associated guidance, is to enable biological waste produced in SGUL teaching and research laboratories, to be disposed of in a safe and efficient manner.

3. Scope

This policy applies to all staff and students of St. George's University of London (SGUL) and to any visitors working within SGUL. Individuals within South West London Pathology (SWLP), South West Thames Regional Genetics service and Analytical Sciences International (ASI) should follow the waste disposal procedures laid down by St. George's University Hospitals NHS Foundation Trust.

4. Risk Assessment

Many of the activities that are undertaken in laboratories are regulated either under the Control of Substances Hazardous to Health (COSHH) regulations 2002 or the Genetically Modified Organisms (Contained Use) regulations 2014. The aim of these regulations is to reduce the risk to those undertaking the work and also to those who will be handling the waste once the work has finished. Both these regulations require that risk assessments are undertaken prior to starting any project. Disposal of any waste produced must be considered as part of the risk assessment and suitable treatment methods and disposal routes identified. SGUL is required to follow the Environmental Permitting Regulations 2010.

5. Definitions

Pathogenic human and animal organisms

Human pathogenic organisms such as viruses, bacteria, parasites and prions are defined by the Advisory Committee on Dangerous Pathogens ([ACDP](#)) in to one of four categories. Work involving organisms in biohazard groups 1 – 3 is permitted at SGUL.

Certain animal pathogens are defined under [schedule 1](#) of the Specified Animal Pathogen Order (SAPO) 2008.

Further information on these organisms is available in the associated waste disposal guidance.

Genetically Modified Organisms

Genetically modified micro-organisms (GMO) or genetically modified organisms including plants are those whose DNA or RNA has been altered either by recombination, synthetic biology or other methods as defined by the [Genetically Modified Organisms \(Contained Use\) Regulations 2014](#).

Other Biological waste

This includes waste generated from work involving the use of the following types of materials.

- Human anatomical waste
- Blood, saliva or other bodily fluids
- Mammalian cell lines

Other laboratory waste

Other laboratory waste may contain hazardous chemical agents that also needs to be discarded appropriately (e.g. PCR products, Immunoassay products, protein or nucleic acid electrophoresis gels). The list is not exhaustive and may change according to the nature of the research carried out within SGUL.

Biological waste treatment methods

All waste produced from work involving pathogenic and / or Genetically Modified Organisms must be treated prior to disposal.

Treatment of waste containing pathogenic or genetically modified organisms

Waste containing either pathogenic (ACDP biohazard group 3) or genetically modified organisms must be autoclaved at 134°C.

Waste containing ACDP biohazard group 2 organisms may be treated by chemical means as an alternative to autoclaving.

If destruction is to be achieved by methods other than autoclaving, the method of treatment must be validated and a record of the validation experiments kept. The selected chemical destruction method should deliver at least a 10^5 reduction in colony forming units (cfu's) following treatment.

Other non-pathogenic living waste types

Waste that does not contain pathogens or genetically modified organisms e.g. cell lines may be treated either by autoclaving or disinfection as appropriate. If chemical destruction is used, the treatment method should be validated to ensure that the chosen method renders organisms unviable.

Electrophoresis Waste

Waste polyacrylamide electrophoretic gels and waste containing Toxins must be disposed of in yellow bags. Gels that have been contaminated with Ethidium Bromide must be disposed of as cytotoxic waste.

Uncontaminated waste from laboratories

Recycling bins that are lined with green bags can be used for uncontaminated waste such as, pipette covers, hand towels, cardboard boxes. Bins that are lined with black bags are for items that will not be recycled e.g. food waste. These bins must be placed outside of the lab to allow the cleaners to remove them.

7. Biological waste post-treatment disposal methods and segregation

Disposal of biological waste must use one of the following routes chosen primarily on safety but also minimizing environmental cost:

- Offensive / non-infectious waste (Black and Yellow Tiger stripped bags)
- Clinical waste not contaminated with hazardous chemicals (Orange bags)
- Sharps exposed to clinical waste not contaminated with hazardous chemicals - Orange lidded Sharps boxes
- Clinical waste contaminated with hazardous chemicals (Yellow bags)
- Sharps exposed to clinical waste contaminated with hazardous chemicals - Yellow lidded Sharps boxes

- Waste contaminated with Cytotoxic / cytostatic chemicals (Purple and Yellow striped bags)
- sharps exposed to cytotoxic / cytostatic chemicals - Purple lidded Sharps boxes -
- Anatomical waste (Red Sharps boxes)

The waste bags and boxes *must* be disposed of in the caddies under the wall signs identifying the waste type.

Waste must *not* be left in corridors besides caddies under any circumstances.

8. Individual Roles

All individuals within SGUL have roles in ensuring that biological waste is disposed in a safe manner.

Principal Investigators

Principal Investigators bear the ultimate responsibility for the health and safety of the staff and students in their laboratory and ensuring compliance with the regulations associated with the project. ([Leadership and management of health and safety in higher education institutions.](#))

- Ensure that all COSHH and / or GMO risk assessments and the resulting Standard Operating Procedures include the method to deal with any waste produced. The assessment should also take into account the hazard that could be posed by the selected destruction method.
- Ensure that staff and students are aware of the need to dispose of waste immediately experimental work has finished.
- Ensure that staff and students attend the overall waste training provided by the SHE office.
- Should ensure that staff and students are trained in the appropriate waste treatment and disposal methods if necessary they may arrange for a nominated competent person to undertake the training.
- Ensure that staff and students are disposing of waste using the correct procedures.

Staff

Staff have a responsibility to ensure that they comply with requirements of the project risk assessment and are competent in using any necessary equipment. Staff with students also have a responsibility to ensure that their students follow the requirements of the project risk assessment.

- Individuals who have responsibility for staff and students must ensure that the required risk assessments and standard operating procedures have been completed and an appropriate method of waste disposal selected.
- Staff must have read the risk assessment associated with their project and be competent in using the identified waste disposal methods.
- Staff should intervene if they observe that people are not disposing of waste in an appropriate manner.
- Staff must attend waste training as required.
- They must dispose of all waste materials in line with the project risk assessment / standard operating procedure.
- Staff must label all bags and sharps boxes with their name and the lab from which from the waste originated and use the correct tag for the research centre, research institute or teaching area.
- Staff must not overfill caddies and waste materials must not be left in corridors.
- Report all failed equipment to the laboratory managers or members of the core facilities technical team.

- Must report any accidents involving waste disposal equipment or chemicals.

Students

All students have a responsibility to follow instructions given to them by PI's, lecturers or other staff.

- Students must attend waste training as required.
- They must dispose of all waste materials in line with the project risk assessment / standard operating procedure.
- If in doubt students should consult the Principal Investigator (PI), local staff or the laboratory managers on the correct disposal methods for the project.
- Students must label all bags and sharps boxes with the correct tag for the research centre or research institute.
- Students must not overfill caddies and waste materials must not be left in corridors.
- Report all failed equipment to their PI, the laboratory managers or members of the core facilities technical team.
- Must report any accidents involving waste disposal equipment or chemicals.

If there is any doubt about the appropriateness of a disposal method the SHE office can be contacted for advice and information.

9. Training

All staff and students should attend the general waste disposal training course run by the Safety Health and Environment office.

Principal Investigators should train staff and students in the following points or arrange for a nominated competent person to train these colleagues.

- Specific treatment methods applicable to the project.
- Operation of autoclaves if necessary.
- Segregation of waste.
- Disposal routes including which bags, boxes and caddies to use.
- How to arrange for a replacement caddy if required.
- Where to obtain further advice.
- Accident / incident reporting relating to problems with the disposal of the waste.

10. Information

Further information on disposal of waste is available in the biological waste disposal guidance. Information can also be obtained the SHE office.