Biological Safety

This document outlines the procedures that are in place to ensure safe working practices with microorganisms and cultured cells and where the responsibility lies for ensuring that procedures are followed correctly. General guidelines for good microbiological practice and disposal of biological waste are provided at the end of this section. Risk Assessments must be prepared and approved before any work that involves genetically modified organisms (GMOs) can take place.

Responsibility of the Departmental Biological Safety Officer

The Departmental Biological Safety Officer will offer advice on all matters of biological safety within the Department of Physics. The Departmental Biological Safety Officer will act as a point of contact with the University Safety Office. The Departmental Biological Safety Officer will guide GMO Risk Assessments submitted to him/her through the approval process and notify the Group Leader when permission has been granted to undertake work. The Departmental Biological Safety Officer will maintain a record of all information submitted to him/her by Group Leaders and other responsible people in the following categories:

GMO Risk Assessments (including appendices that list the individuals who are working on the project and the hosts and vectors currently in use).

List of Microbiological Safety Cabinets to include make, serial number, location and current KI test reports.

List of autoclaves to include make, serial number, location and current validation reports.

Once per year the Departmental Biological Safety Officer will ask all Group Leaders who are working on projects covered by a GMO Risk Assessment to confirm that the information he/she holds is up to date. This information will be sent to the University Safety Office as part of the Biological Return.

The Departmental Biological Safety Officer will ensure that procedures are in place for the safe use, maintenance and testing of autoclaves. Named individuals will be responsible for implementing the procedures.

Responsibility of the Group Leader

It is the responsibility of Group Leaders to ensure that activities with Genetically Modified Organisms (GMOs) are documented by suitable risk assessments and that work is carried out according the procedures outlined in the Risk Assessment.

The Group Leader will keep an up to date list of those working on projects covered by GMO Risk Assessments and a list of hosts and vectors in use (this can be done by updating appendices attached to the GMO Risk Assessment – modification of the appendices does not require approval from the Biological Safety Officer).

The Group Leader will ensure that those working on projects covered by the GMO Risk Assessment(s) receive appropriate training and supervision for the work described.

The Group Leader will ensure that no autoclaves or microbiological safety cabinets are installed without first notifying the Departmental Biological Safety Officer.

Once per year, in response to an email reminder, the Group Leader will notify the Departmental Biological Safety Officer of any changes made to the appendices of the GMO Risk Assessment

Responsibility of Group Members

Group Members should not start GMO work unless they are confident that they have received satisfactory training and will be given satisfactory supervision.

Group Members working on projects that involve GMOs should be familiar with the Risk Assessments that cover the work that they plan to do. They must be familiar with the principles of good microbiological practice including appropriate protective clothing, waste disposal routes and disinfection procedure in case of spillage.

Preparing GMO Risk Assessments

Group Leaders will prepare Risk Assessments for all work involving Genetically Modified Organisms (with advice from the Departmental Biological Safety Officer if required). They will submit a signed copy of each Risk Assessment to the Departmental Biological Safety Officer. In addition a Control of Substances Hazardous to Health assessment may be required.

The Departmental Biological Safety Officer will ensure that each Risk Assessment that is submitted to him/her is sent to the Genetic Modification Safety Committee for approval. If approved by the committee, permission to undertake the work will then been granted by the Head of the Department. The Group Leader will receive a copy of the Risk Assessment signed by the Departmental Biological Safety Officer and by the Head of Department.

The appendices of the Risk Assessment which list the individuals working on the project and the hosts and vectors in use can be modified without approval from the Biological Safety Officer or the Genetic Modification Committee. The Group Leader will notify the Departmental Biological Safety Officer of any changes made to the appendices in response to an annual email reminder.

Autoclaves and Microbiological Safety Cabinets

All Autoclaves and Microbiological Safety Cabinets will have a written procedure for day-to-day use, maintenance and testing that has been approved by the Departmental Biological Safety Officer. There will also be a named individual who is responsible for implementing the procedure. The Departmental Biological Safety Officer will ask the responsible person for test certificates once per year.

Laboratory Rules (Containment Level 1)

The following local rules should be observed while working at Containment Level 1

a) The lab door(s) should be closed while work is in progress
b) Lab coats must be worn in the lab and be removed when leaving the lab area
c) Suitable eye protection must be worn for all chemical procedures
d) Eating, drinking, applying cosmetics, smoking and food storage is not allowed in the lab
e) Mouth pipetting is prohibited
f) The lab should contain a sink that can be used for washing hands
g) Hands must be washed and disinfected when any contamination is suspected, after handling viable and before leaving the laboratory.
h) Personal protective equipment, including lab coats and glasses, must be stored in a well-defined place
i) Lab coats that may be contaminated with biological agents must be removed on leaving the working area, kept apart from uncontaminated clothing and equipment and decontaminated and cleaned
j) All procedures must be performed to minimise the production of aerosols
k) Effective disinfectants must be available for use in the event of a spillage
l) Bench tops should be cleaned after use
m) All contaminated glassware must be decontaminated before removal from the lab for washing

n) Sharps should not be used unless there is no alternative. If sharps are used then they must be placed directly in sharps bins for disposal.
o) All workers in the laboratory must cover cuts and abrasions with a waterproof dressing.
p) All accidents and incidents must be recorded, at the time. The Departmental Biological Safety Officer must be informed of any accidents or incidents involving genetically modified organisms as soon as possible.

Waste Disposal Procedures

a) *Liquids (e.g. cultures, culture supernatants)* - disinfect with 1% Virkon for at least 30 minutes, discharge any excess liquids to drains. After disinfection glassware (e.g. flasks and test tubes) are washed, autoclaved then reused.
b) *Sharps (e.g. needles, syringes, scalpels)* - dispose via clinical waste stream for incineration.
c) *Agar plates and plastic consumables (e.g. pipettes, pipette tips, Eppendorf tubes)* - autoclave using a make safe cycle as specified in BS 2646, Part 3, 1993 (either 121-125˚C for at least 15 minutes or 126-130˚C for at least 10 minutes or 134-138˚C for at least 3 minutes), discharge any excess liquids to drains, dispose of solids via the industrial (black bag) waste stream for landfill.