

Code of Practice

Microbiological Safety Cabinets

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1 Purpose and Scope

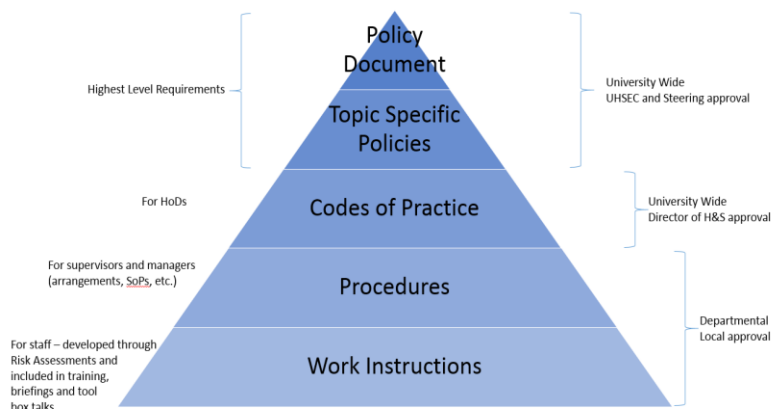
This Code of Practice (CoP) applies to all microbiological safety cabinets (herein referred to as MSCs) located in microbiological containment laboratories used by staff, students, and visitors at the University of Warwick, except for those within containment level 3 laboratories, which are the subject of a specific departmental CL3 Code of Practice (Ref.14). Specifically, it details the University-wide arrangements and responsibilities for the procurement, management, design, installation, maintenance, examination, testing and use of MSCs.

The objective of the management arrangements described within this code of practice is to ensure compliance with regulation and to protect employees, students, third party occupiers, contractors and inspectors or any others that might use, maintain, or inspect MSCs within the University.

This CoP forms part of the University of Warwick’s Occupational Health and Safety Management System and supports the University of Warwick Local Exhaust Ventilation Policy. It should be read in conjunction with the Policy and the associated guidance on the management of LEV systems, which are available on the University’s Health and Safety web pages (Ref. 1).

Departmental/Estates arrangements for all other aspects of the management of MSCs are detailed in local procedures, including Standard Operating Procedures (SOPs) and Work Instructions, as indicated in the document hierarchy below:

Figure 1: Health and Safety Document Hierarchy



Note: Although MSCs are a type of local exhaust extraction (LEV), they are currently excluded from the new ‘corporate approach’ to overall accountability for statutory inspections and compliance being taken for other types of LEV at the University, and are therefore subject to this specific Code of Practice (for detail about the arrangements for other types of LEV, see the Code of Practice for LEV, which is available on the Health and Safety web pages (Ref. 1)). A transition to a corporate approach for MSC is currently planned, and once implemented, the MSC CoP and LEV CoP will be merged into a single document.

In the case of lease or licence arrangements, due consideration must be given to the extent, access, proposed use, maintenance, and examination of any MSC falling wholly or partially within the demise of the relevant lease or licence. This applies to circumstances wherein the University is either landlord or tenant/occupier. Leases, licences, and other agreements will be handled through the Estates office and must be in accordance with an application form process. For further information refer to the [Property Management](#) web page.

2 Introduction

The primary purpose of MSCs is as an engineering control measure to reduce the risk of exposure to aerosols of viable biological agents. All work with biological agents must be conducted at a microbiological containment level appropriate to the activity, as identified in the findings of a biological or genetic modification (GM) risk assessment required by the Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH, Ref. 4), the Genetically Modified Organisms (Contained Use) Regulations 2014 (GMOCU, Ref. 6) or the Specified Animal Pathogens Order 2008 (SAPO, Ref. 7), as well as other general duties under the Management of Health & Safety at Work Regulations 1999 (Ref. 3) and the Health & Safety at Work, etc. Act 1974.

Work must not commence until such risk assessments have been approved by the University's Genetic Modification & Biosafety Committee (GMBSC) and, where required, the Health & Safety Executive (HSE). The requirement for use of an MSC shall be identified in the biological or GM risk assessment.

More detailed guidance about controlling the risks from biological agents is available on the Health and Safety Executive biosafety webpages (www.hse.gov.uk/biosafety) and from the Advisory Committee on Dangerous Pathogens in the document 'Management and operation of microbiological containment laboratories' (Ref. 8). This is also the subject of the Biological Safety Policy of the University, which is available via the University's Biological Safety web page (Ref 2.)

2.1 Definitions

A MSC is a particular type of local exhaust ventilation (LEV), comprising a ventilated enclosure which offers protection to the user and/or the environment from hazardous biological material. MSCs use a combination of airflow and filtration to contain airborne droplets and particles generated during handling of biological agents or infectious material, preventing their escape and exposure of workers and the local environment. All exhaust air discharged to atmosphere from an MSC must pass through one or two high-efficiency particulate absorption/arresting (HEPA) filters, or equivalent.

MSCs fall into three different classifications, each offering different levels of protection to workers and materials:

- **Class I:** Provides operator protection by maintaining an inward flow of air past the operator and over the work surface. They have an open aperture at the front through which the operator can carry out manipulations on potentially hazardous materials. The exhaust air is HEPA filtered, but incoming air is unfiltered, therefore this type of cabinet is not designed to offer protection to material being handled. Class I MSCs are suitable for work with all biological agents up to HG3.
- **Class II:** Provides protection to both the operator and the materials being handled as the inward airflow is diverted beneath the work surface and is HEPA filtered before recirculation within the work area. They have an open aperture at the front through which the operator can carry out manipulations on potentially hazardous materials. Downward airflow onto the work surface also minimises the possibility of cross-contamination within the cabinet. Class II MSCs are suitable for work with all categories of biological agent up to HG3, although they are more susceptible to disruption of the airflows so are not generally appropriate for use with airborne pathogens with a low infectious dose, when a Class I MSC should be used. It is usual to use Class I MSCs as the primary containment in a CL3 laboratory.
- **Class III:** Provides maximum protection for the operator, the work, and the environment. They are fully enclosed, with full arm-length gloves (gauntlets) that are sealed to ports in the front of the cabinet, through which the operator can carry out manipulations on potentially hazardous materials. All inward and exhaust air is HEPA filtered. Use of Class III MSCs is usually restricted to work with HG4 biological agents, although may be appropriate for work with some agents classified at HG3.

References to 'air handling system and associated building plant' include the fixed systems that are maintained by Estates, such as extract ductwork, dampers, fans, control panels and electrical supplies. Other than electrical supply, these systems are not generally present in recirculating MSCs but relate to those which are ducted to the external atmosphere.

MSCs are not designed to protect the user from all hazardous materials e.g., toxic chemicals or radioactive material, because the exhaust HEPA filters will not remove these types of contaminants from the air. Use of nanomaterials should be restricted to ducted MSCs, unless the quantities used are small (<1g) or if their properties indicate a reduced risk (e.g., low aspect ratio or no biopersistence)

Laminar flow cabinets are not MSCs and do not provide any operator protection, so should not be used when handling potentially infectious materials.

All MSCs are subject to the statutory requirement in COSHH for Thorough Examination and Test (herein referred to as TExT), at an interval not greater than 14 months. Further information concerning TExT can be found in chapter 4.3.

2.2 Competence

The Management of Health and Safety at Work Regulations 1999 (Ref. 3) and COSHH Regulations (Ref. 4) require a level of competence for whoever:

- specifies requirements of a MSC;
- designs or selects MSC as a control measure;
- checks, tests or maintains MSC;
- audits compliance of MSC and/or MSC use;
- supplies, installs or otherwise provides MSC equipment, advice or other services to the University;
- uses MSC as a control measure.

Records of all staff and student MSC training shall be recorded and retained in accordance with the University Records Retention Schedule (Ref. 12).

When procuring new MSCs, the supplier shall be required to provide training in how to use, check and maintain it.

Further details concerning training and awareness required for working with MSC is available on the University's Health and Safety web pages (Ref. 1) and the training matrix within Appendix B.

3 Responsibilities

The principal responsibilities for the management of health and safety are stated in the University of Warwick Health and Safety Policy (with line management/delegation of duty described in the document 'Leadership and Management of Health and Safety at the University of Warwick') and complemented by a topic specific Policy for LEV. These documents are available via the University's Health and Safety web page: <https://warwick.ac.uk/services/healthsafetywellbeing/guidance/handspolicy>.

In summary, the owning/using department is accountable for the specification and use of MSCs under their control and arranging the necessary TExT and maintenance. Estates is responsible for maintaining any related air handling system and the associated building plant.

This document further clarifies the specific accountability and responsibilities held by roles within the University, in relation to MSC. These responsibilities are summarised within the Responsibilities Grid for LEV (Appendix A) and allocated as follows (N.B. Some of these roles may overlap, be merged, or delegated, depending on arrangements within individual departments):

3.1 Duties of the Provost (Accountable Person for MSC)

The accountability for ensuring legal compliance with regards the maintenance, servicing and TExT of MSCs within Schools/Departments rests with the Provost, who has delegated the responsibility for the discharging of these duties to the relevant Heads of School/Department that own or use them.

The Provost remains accountable for:

- ensuring adequate budget and resource is made available for the TExT, maintenance, remedial work and any training required to ensure compliance of MSCs with the relevant legislation and guidance;
- ensuring that non-compliances notified to them are addressed, without undue delay

3.1.1 Duties of Heads of School/Department (Responsible Person for MSC)

Where the School/Department owns or uses MSC, the Head of School/Department is responsible for discharging duties of the accountable person, including:

- ensuring compliance with any relevant statute, ACOP, standard or guidance concerned with the procurement, installation, operation, maintenance, servicing, testing and inspection of MSC in areas under their control;
- ensuring implementation of LEV Policy, this Code of Practice and the associated arrangements, instructions and guidance, in areas under their control;
- ensuring the allocation of any necessary budget and resources for TExT, maintenance, remedial work and training related to the MSC used in the department;
- ensuring that departmental compliance checks are carried out at agreed intervals, documented and made available to the Director of Health and Safety or their nominated deputies, noting that the air handling systems and building plant associated with MSCs shall fall under the responsibility of others;
- ensuring the escalation of any non-compliance reported to them, to the Accountable Person.

The Head of School/Department shall be assisted in the discharging of these duties by the involvement of the Senior Administrator, Technical Service Manager / Facility Manager, Director of Estates, and the Subject Matter Expert.

3.1.2 Duties of the Senior Administrator (School/Department)

The Senior Administrator for the School/Department, is responsible for:

- ensuring suitable resource and budget are available for PPM, TExT, remedial maintenance and training for MSC;
- ensuring that departmental procedures (SOPs, work instructions, local emergency procedures) are created and communicated, detailing how an activity or process using MSC within that department is to be carried out, managed and monitored;
- identifying the department's Point of Contact(s) for MSC, to act as the primary interface(s) to Estates and users and to manage any external contract for TExT and maintenance with regards to MSC (see Chapter 3.6);
- escalating any non-compliance discovered or notified to them, to the Responsible Person.

3.1.3 Duties of Technical Service Managers / Facilities Managers

Technical Service Managers and Facilities Managers within Schools/Departments, supported by their respective managers, staff and Estates Building and Facilities Managers are responsible for:

- putting into place local arrangements for maintenance, TExT and remedial works relating to MSC owned or used by the department;
- ensuring the provision of suitably trained and competent staff/contractors for TExT and maintenance of MSC under departmental control;

- ensuring contractors are appointed and managed in accordance with the University Contractor Management Policy and associated guidance (Ref. 13);
- ensuring that any relevant arrangements have been made to mitigate risks to safety of staff/contractors whilst carrying out TExT and maintenance of MSC under departmental control;
- addressing, through engagement of competent personnel or contractors and supported by the H&S Lead, the generation of documents essential to system compliance, where these have not historically been in place;
- cooperating with arrangements for maintenance, TExT and remedial works, providing local technical and facilities support, as required;
- ensuring that departmental checks are carried out to provide assurance that activities relating to MSC maintenance and TExT are being performed in compliance with the Policy and arrangements. Thus providing a 'first line of defence' for assurance, as illustrated in Appendix C;
- putting into place departmental arrangements for the safe disposal of contaminated filters and other hazardous waste;
- escalating any non-compliance discovered or reported to them, to the Responsible Person and to the Director of Operations, as appropriate.

3.1.4 Duties of Point of Contact for MSC (School/Department)

Departmental Point of Contact(s) for MSC are responsible for:

- validating that all MSC used within their department or facility are asset tagged and included in the University register of items to be maintained and inspected;
- working with the appointed contractor, Technical Services Manager/Facilities Manager, Estates and users, to locally timetable and facilitate maintenance/inspection visits, TExT and remedial works related to MSC and associated air handling systems and building plant (see Chapter 4.3 for more details regarding TExT);
- ensuring that any contractor(s) providing maintenance and TExT for MSC is delivering the required level of service, including notification of the TExT results and delivery of documentation in a timely manner;
- ensuring that all contractors complete the necessary induction for the areas where they will be working;
- ensuring that the contractor provides a task-specific risk assessment for the work to be undertaken;
- informing end users when MSC equipment has failed TExT or has a defect, ensuring it is marked as unfit, and taken out of use, until remedied;
- monitoring, and escalating to the Technical Service Manager/Facility Manager, Estates Building and Facilities Manager, or Estates maintenance, as necessary, reports of defects, failure, or issues with regards MSC or associated air handling systems.

3.1.5 Duties of Principal Investigators / Supervisors

Principal Investigators (PIs) and Supervisors of staff and students using MSC are responsible for:

- ensuring that a biological/GM risk assessment has been written and submitted to the GMBSC and that it has received approval (including from the HSE where required) before any work with biological agents is undertaken;
- ensuring the identification, implementation and monitoring of control measures, including MSCs;
- providing all required information, instruction, training and supervision to users, in relation to the correct selection, operation and user checks of any MSC;
- maintaining records of all MSC training and ensuring only those trained are authorised to use the system;

- ensuring that work using MSCs is undertaken in accordance with the biological/GM risk assessment and the level of protection/control provided by that system e.g. selection of the appropriate class of MSC for the work;
- ensuring the use of MSC in accordance with the user manual/operating instructions including the maintaining of the MSC logbook;
- monitoring MSC operation and user checks to ensure they are being carried out in accordance with instructions, providing a 'first line of defence' for assurance, as illustrated in Appendix C;
- ensuring that, for new MSCs not acquired or installed through Estates Capital Programmes, the H&S Lead is consulted before purchase and that sufficient information is supplied to determine the correct specification of MSC (see also Chapter 4.1, System Specification, Design and Procurement);
- ensuring that the H&S Lead and Estates are consulted regarding any proposed modifications to existing MSC systems before any changes are made;
- ensuring advice is obtained from the H&S Lead (or other competent person) concerning the continued suitability of the MSC as a control measure before significant changes are implemented with regards to the process or equipment that MSC is serving, type of hazard or workplace layout;
- ensuring that all MSCs under their control are asset tagged and added to the register of items to be inspected, including the provision of the related asset information and documentation, by the completion of the Statutory Inspection Report Form (Ref. 11);
- cooperating with arrangements for maintenance, TExT and remedial works and making available any MSC requiring such;
- providing information about the type of work and risks from hazardous materials used in the MSC to Estates upon request, when designing new systems or prior to Estates maintenance staff, contractors or engineering inspectors working on the MSC or associated air handling system and building plant;
- ensuring appropriate decontamination is carried out prior to any maintenance, TExT and remedial works;
- ensuring that any MSC is taken out of use immediately following notification of a TExT failure, or notification of a fault/condition that could give rise to danger;
- seeking further information and advice as necessary, from the H&S Lead, competent personnel or consultants, before working with MSC.

3.1.6 Duties of MSC Users

Staff and students using MSC are responsible for:

- ensuring that the correct MSC is used as per the biological/GM risk assessment to control exposure to the identified hazardous biological material(s);
- ensuring that work requiring the use of MSC equipment is only undertaken following the provision of adequate information, instruction, training and supervision;
- maintaining a safe working environment and following the 'good MSC practice' guidance whilst working with MSC;
- undertaking any user checks of the MSC that may be required, and recording any defects in the logbook;
- reporting any defect associated with their MSC, without delay, to their PI/supervisor and Departmental Point of Contact for MSC initially, ensuring that the issue and any follow-up action is recorded in the logbook;
- following the operating procedures, including any local emergency procedures in the event of a failure of the MSC;
- not using the MSC inappropriately or for anything other than its intended purpose;
- leaving the MSC in a safe condition during closure periods.

A pro forma logbook for MSC, including 'good MSC practice' guidance for users is available on the University's Health and Safety web pages (Ref. 1).

3.2 Duties of the Director of Health and Safety

The Director of Health and Safety is responsible for:

- ensuring that the University's Health and Safety web pages for LEV are kept up to date with the related LEV Policy and guidance documents and these are communicated to stakeholders;
- ensuring that a suitably trained and competent person is assigned as the Health and Safety lead for MSC (see Chapter 3.2.1);
- providing health and safety resource to advise and support departments, to enable the departments to produce suitable and sufficient risk assessments and procedures for activities involving the use of MSC;
- ensuring that spot checks, inspections and internal planned audits are carried out to provide assurance that activities relating to MSC management and use are being performed in compliance with the Policy and arrangements. Thus, providing the 'second line of defence' and 'third line of defence' for assurance, as illustrated in Appendix C;
- providing any appropriate intervention to prevent ongoing and/or repeated non-compliance that gives rise, or could give rise, to statutory breach and/or a risk to health, safety or the environment;
- reporting back to the Responsible Person and the appointed H&S Lead any non-compliance discovered or notified to them.

3.2.1 Duties of the Health and Safety Lead for MSC

Appointed, by the Director of Health and Safety, the Health and Safety Lead for MSC (herein referred to as H&S Lead) shall be the lead authority within the University on matters relating to MSC safety. The H&S Lead (supported through engagement of competent personnel or consultants, as necessary), is responsible for:

- providing advice to the accountable person, and any other person allocated responsibility in this document, on the health and safety standards and regulations that must be achieved with respect to the discharging of their duties. These include, but are not necessarily limited to, design, procurement, maintenance, servicing, testing, inspection and use of MSC;
- providing internal guidance in relation to the creation and installation of new assets, maintenance, servicing, testing and inspection and use of MSC;
- specifying any health and safety training and awareness required, across the University;
- supporting the development of policy;
- reviewing requests for new MSC, as advised to them by Departments or Capital Programmes, and providing health and safety advice concerning their suitability as a control measure;
- providing advice concerning the generation of documents essential to system compliance, where these have not historically been in place;
- escalating any non-compliance discovered or reported to them, to the Head of School/Department and to the Director of Operations, as appropriate.

Note: The H&S Lead is not an Engineer or technical person, but someone with the necessary Health and Safety background, experience, and training to be able to interpret the associated Regulations, ACOPs or sector guidance, etc. They would typically be a chartered Health and Safety professional (CMIOSH) responsible for interpretation of law/HSE requirements and advising others within the University accordingly.

3.3 Duties of the Group Finance Director

The accountability for ensuring legal compliance with regards the maintenance and servicing of the air handling system and building plant associated with MSCs within the University rests with the Group Finance Director, who has delegated the responsibility for the discharging of these duties to the Director of Estates.

The Group Finance Director remains accountable for:

- ensuring adequate budget and resource is made available for maintenance, remedial work and any training required to ensure compliance of the air handling system and building plant with the relevant legislation and guidance;
- ensuring that non-compliances notified to them are addressed, without undue delay.

3.3.1 Duties of the Director of Estates

The Director of Estates is responsible for maintaining the air handling system and building plant including:

- ensuring compliance with any relevant statute, ACOP, standard or guidance concerned with the installation, maintenance, servicing and testing of the building facilities serving MSC;
- ensuring implementation of LEV Policy, this Code of Practice and the associated arrangements, instructions and guidance, in areas under their control;
- ensuring the allocation of any necessary budget and resources;
- ensuring availability of suitably trained and competent staff/contractors for maintenance activities;
- ensuring the escalation of any non-compliance reported to them, to the Responsible Person.

The Director of Estates shall be assisted in the discharging of these duties by the involvement of competent personnel or contractors and supported by the Subject Matter Expert.

3.3.2 Duties of the Capital Programme Director (Estates)

The Capital Programme Director, supported by their respective programme/project managers and engagement of competent personnel or consultants, as necessary, is responsible for:

- ensuring that requests for new MSC, modifications to existing MSCs or the associated air handling systems and building plant, made via an Estates project, are reviewed by the Technical Lead for LEV and the H&S Lead for MSC and in conjunction with the risk assessment provided by the requesting department;
- ensuring that the specification of new MSC that are supplied through Estates meet the requirements of legislation, ACOPs, standards and guidance, as appropriate;
- in the case of particulate nanomaterials only, ensuring that any design takes account of any requirements of the Dangerous Substances and Explosive Atmospheres Regulations (Ref. 9) and associated Approved Code of Practice (Ref. 10);
- ensuring that any MSC installed or modified during a project is appropriately commissioned, and that the commissioning is witnessed by the client and by maintenance representatives;
- ensuring that, following installation of new MSCs, details of the assets are provided to Estates Information and Systems team in order that they can be registered and added to any PPM and examination schedule immediately following handover;
- ensuring the timely receipt of all required documentation and the provision of such documentation and asset information (in the required format) to Estates Information and Systems, the department, and to maintenance (see chapter 4.4, Documentation);
- ensuring periodic review of the Mechanical Electrical and Public Health (MEP) Design Standards (involving the Technical Lead for LEV and the H&S Lead for MSC, as required) to ensure that they remain current with the applicable legislation and standards.

Appendix D provides an overview of the process used for Estates capital projects involving MSC.

3.3.3 Duties of Director of Operations (Estates)

The Director of Operations, supported by their respective managers, is responsible for:

- planned preventative maintenance (PPM), remedial maintenance, testing and inspection of air handling systems and building plant associated with MSC which have been notified to Estates;
- ensuring suitable resource and budget are available for PPM, remedial maintenance and training;
- escalating any non-compliance discovered or notified to them, to the Responsible Person.

3.3.4 Duties of the Head of Maintenance (Estates)

The Head of Maintenance, supported by their personnel, is responsible for:

- putting into place arrangements for maintenance, testing, inspection, and remedial works relating to air handling systems and building plant associated with MSC which have been notified to Estates, including communication and coordination of such works with the Departmental Point of Contact(s) for MSC (see Chapter 3.1.4).
- ensuring that any information arising from maintenance, testing, inspection or remedial works, under their direction or control, is retained and communicated to relevant stakeholders;
- providing to any employees under their control, the information, instruction and training required for proper execution of that role;
- ensuring that any person required to undertake work on air handling systems and building plant has sufficient competence to safely complete the task, and that any relevant arrangements have been made to mitigate risks to safety;
- ensuring contractors are appointed and managed in accordance with the University Contractor Management Policy and associated guidance (Ref. 13);
- addressing, through engagement of competent personnel or contractors and supported by the Technical Lead for LEV and the H&S Lead for MSC, the generation of documents essential to MSC system compliance for the air handling systems and building plant, where these have not historically been in place;
- reporting back to the Director of Operations and Head of Assurance, Risk and Property any non-compliance discovered or notified to them.

3.3.5 Duties of the Head of Estates Information and Systems

The Head of Estates Information and Systems is responsible for:

- maintaining the asset register of MSC equipment, as notified to Estates;
- retention of the installation and initial commissioning documents received by Estates, in relation to MSC systems;
- retention of the TExT documents received by Estates, in relation to MSC systems;
- making these documents and information available to those stakeholders requiring access to such as part of the responsibilities allocated herein.

These documents and information shall be retained in accordance with the relevant legislation and the University Records Retention Schedule (Ref. 12).

Appendix E provides an overview of the asset recording process to be used at the University.

3.3.6 Duties of the Head of Assurance, Risk and Property (Estates)

The Head of Assurance, Risk and Property is responsible for:

- ensuring that spot checks and planned audits are carried out to provide assurance that activities relating to the installation, management, maintenance, and TExT of MSC systems are being

performed in compliance with the Policy and arrangements. Thus, providing a 'second line of defence' for assurance, as illustrated in Appendix C;

- ensuring that there are sufficient, suitably trained and competent staff to carry out such assurance tasks;
- seeking assurance that the arrangements for leasing of spaces includes due consideration of the extent, access, proposed use, maintenance, and TExT of any MSC systems falling wholly or partially within the demise of the lease. This applies to circumstances wherein the University is either landlord or tenant/occupier.
- reporting back to the Responsible Person and Director of Operations any non-compliance discovered or notified to them.

4 Requirements for MSC

4.1 System Specification, Design and Procurement

In specifying the correct MSC for the application, departments should follow the guidance set out in the document 'Management and operation of microbiological containment laboratories' from ACDP (Ref. 8), which details the selection and application of containment and control measures for work with biological agents.

MSCs will be specified to standard BS EN 12469:2000 (Ref. 15) to ensure leak tightness, operation protection and product protection as appropriate.

For further information on siting and use of cabinets refer to BS 5726:2005 (Ref.16).

Where a MSC system requires any element of design, prior to installation, it shall be specified in relation to the biological/GM risk assessment for the specific process for which it is intended to be used as a control measure, wherever possible.

If departments need assistance in developing the specification, they should seek advice from the H&S Lead, Estates, or other competent person to help in the selection of the right type of MSC.

For minor works (outside of Capital Projects) Estates Maintenance shall agree with the Department on a case by case basis who will perform the commissioning works. When procuring new MSC, the supplier shall be required to provide a user manual and logbook (see Chapter 4.4, Documentation) and to provide training in how to use, check and maintain it.

It may also be necessary to carry out recommissioning or additional testing when changes have been made to the laboratory that may affect the performance of the MSC.

4.2 Maintenance

There will be maintenance activities for both the MSC (Department led) and for the air handling and associated plant (Estates led). The department and Estates should discuss and agree who maintains which parts of the system.

Where maintenance requirements (e.g., filter replacement, motor performance checks) exist, these shall be undertaken in line with the manufacturer's prescribed intervals. If no such documentation exists, a risk-based approach will be undertaken to define the periodicity of such works, informed by the H&S Lead, or other competent person, as necessary.

Maintenance may require isolation of a part or system. Where this is the case, adequate arrangements shall be made with the department to avoid any loss of any risk control measure, including in facilities which might share common systems such as ductwork, fans, or electrical supply.

Maintenance tasks shall only be undertaken by personnel or contractors who demonstrate the required level of competence to undertake those tasks in a safe manner and to the required standard of workmanship.

Risk assessments for maintenance tasks shall be reviewed in cooperation with departmental staff, to ensure that information relating to potential contaminants is adequately incorporated, in addition to the hazards and controls arising from the task itself and the work environment.

Departments must allow appropriate access when required to carry out maintenance activities; this should be facilitated through the Departmental Point of Contact for MSC, having received prior notification, whenever possible. A Permit to Access high hazard areas shall be required where defined by hazard identification.

Records of maintenance must be stored securely and made available to those stakeholders requiring access to them (see Chapter 4.4 for more details concerning documentation and record keeping).

4.3 Thorough Examination and Test (TExT)

All MSCs must have a statutory TExT, by a competent person, at least once in a period of 14 months from the date of the last test. Shorter periodicities for some or all components of TExT may be required based on risk and defined in local arrangements. Further detail on this is found in 'Management and operation of microbiological containment laboratories' from ACDP (Ref. 8).

For those systems for which a 14-month periodicity applies, in practice the University plan for TExT at intervals of 12 months.

Departments must register all MSC assets under their control, by completing the Statutory Inspection Report Form (Ref. 11).

Departments must appoint Point of Contact(s) for MSC to work with the appointed contractor to locally timetable and facilitate the TExT and remedial works.

The competent person undertaking TExT shall provide a record of the results to the Departmental Point of Contact (including any remedial actions required). They shall also update the test label on the asset with the TExT date and result.

Any MSC that fails TExT must be clearly identified and the users informed, prior to the competent person leaving that area. Such repairs as required for the system to achieve an acceptable level of control must be undertaken before the system is brought back into use. All TExT reports and records of remedial maintenance must be kept for at least five years.

Where the latest date for the next TExT has passed, the MSC shall be taken out of use until satisfactory TExT has been achieved.

In addition to statutory TExT at the prescribed intervals, an Operator Protection Factor Test (OPFT) should be carried out periodically (in accordance with the ACDP guidance and documented in local arrangements) and an air flow check carried out monthly (or if it is suspected that the air flow is not satisfactory). The pro forma logbook for MSC, which includes guidance on carrying out the monthly air flow check, is available on the University's Health and Safety web pages (Ref. 1).

4.4 Documentation and Record Keeping

All MSCs must have the following documents:

- **A user manual:** that describes and explains the MSC, and how to use, check, maintain and test it, along with performance benchmarks and schedules for replacement of parts.
- **A logbook:** to record the results of checks and maintenance on the system.

Both documents must be readily available for reference by users or maintainers and kept up to date. A pro forma logbook for MSC is available on the University's Health and Safety web pages (Ref. 1).

In addition, documentation relating to the installation and commissioning of the MSC must be obtained. Such documentation includes but is not necessarily limited to system schematics including test points, details of

the performance specification, description of the commissioning, commissioning test results, and a description of how operators should use the system, so it works effectively.

Where it is not possible to obtain these documents from the manufacturer/installer of a system, the relevant information shall be determined and recorded, by a competent person, and be subject to review by the H&S Lead.

Records of examination, maintenance and checks must be stored securely and made available to those stakeholders requiring access to them. These records should be retained in accordance with the University Records Retention Schedule (Ref. 12), and in any case, records of TExT must be retained for at least 5 years.

Where examination is carried out by an external contractor, those records must be made accessible to the University.

Asset information, as provided by departments to Estates, will be held by the Head of Estates Information and Systems (see Chapter 3.3.5) and made available within QuEMIS¹, the Estates SharePoint Library, or an alternative suitable data repository.

Records of all staff and student training on biological safety and MSC shall be recorded and retained in accordance with the University Records Retention Schedule (Ref. 12).

4.5 Decommissioning

Where a MSC is to be removed, including as part of any space refurbishment project, consideration must be given to the decontamination and safe disposal of the equipment, with particular focus given to the correct disposal of hazardous materials. The extent and type of decontamination required will depend on the nature of substances extracted by the system and the accessibility to the various parts of the system.

Decontamination of the MSC may be undertaken internally, by suitably competent contractor, or a combination of both. A suitable risk assessment must be undertaken and information about the hazards posed by any substances used must be made available by the department to those undertaking the decommissioning work.

Any proposed decommissioning of fixed MSC (those which connect to ductwork or other building infrastructure) must be advised to Estates.

Departments must also ensure they follow relevant University financial procedures concerning disposal of assets and the update of financial asset registers and inventory lists.

Following decommissioning and disposal, Departments must complete the Statutory Inspection Report Form (Ref. 11) in order that the MSC is removed from the TExT register.

5 Operational Use

A suitable and sufficient biological/GM risk assessment must be in place, prior to any work involving MSC and must be enacted by the department.

The department must ensure that MSC are operated only by persons trained to do so, and in line with the requirements and limitations of that system and in accordance with the local rules/work instructions.

¹ 'QuEMIS' is the University of Warwick's online asset and maintenance recording system. The system generates planned and reactive maintenance tasks.

6 References

1. University of Warwick Health and Safety Services guidance on Local Exhaust Ventilation:
<https://warwick.ac.uk/services/healthsafetywellbeing/guidance/lev>
2. University of Warwick Health and Safety Services guidance on Biological Safety:
<https://warwick.ac.uk/services/healthsafetywellbeing/guidance/biologicalsafety>
3. The Management of Health and Safety at Work Regulations 1999:
<https://www.legislation.gov.uk/uksi/1999/3242/made>
4. The Control of Substances Hazardous to Health Regulations 2002 (as amended):
<https://www.legislation.gov.uk/uksi/2002/2677/contents/made>
5. Approved Code of Practice and guidance (ACOP L5) to the Control of Substances Hazardous to Health Regulations 2002:
<https://www.hse.gov.uk/pubns/books/l5.htm>
6. The Genetically Modified Organisms (Contained Use) Regulations 2014 (GMOCU), guidance from HSE:
<https://www.hse.gov.uk/pubns/priced/l29.pdf>
7. The Specified Animal Pathogens Order 2008 (SAPO), guidance from HSE:
<https://www.hse.gov.uk/biosafety/sapo.htm>
8. Management and operation of microbiological containment laboratories, Advisory Committee on Dangerous Pathogens (ACDP):
<https://www.hse.gov.uk/biosafety/management-containment-labs.pdf>
9. The Dangerous Substances and Explosive Atmospheres Regulations 2002 (as amended):
<https://www.legislation.gov.uk/uksi/2002/2776/contents/made>
10. Dangerous Substances and Explosive Atmospheres Regulations 2002. Approved Code of Practice and guidance (ACOP L138):
<https://www.hse.gov.uk/pubns/priced/l138.pdf>
11. Statutory Inspection Report Form:
https://warwick.ac.uk/services/healthsafetywellbeing/guidance/statest/crimson/plant_equipment_statutory_testing/
12. University Records Retention Schedule:
<https://warwick.ac.uk/services/sim/guidance/recordsmanagement>
13. University Contractor Management Policy and guidance:
<https://warwick.ac.uk/services/healthsafetywellbeing/guidance/contractors>
14. CL3 Code of Practice (SLS/WMS):
https://warwick.ac.uk/fac/sci/lifesci/intranet/staffpg/support/safety/bio/containment/cl3/cop_cl3_003_final_v3_feb_2021.pdf
15. BS EN 12469:2000 - Biotechnology. Performance criteria for microbiological safety cabinets:
<https://shop.bsigroup.com/products/biotechnology-performance-criteria-for-microbiological-safety-cabinets/standard>
16. BS 5726:2005 - Microbiological safety cabinets. Information to be supplied by the purchaser to the vendor and to the installer, and siting and use of cabinets. Recommendations and guidance:
<https://shop.bsigroup.com/products/microbiological-safety-cabinets-information-to-be-supplied-by-the-purchaser-to-the-vendor-and-to-the-installer-and-siting-and-use-of-cabinets-recommendations-and-guidance/standard>

7 Document Control

Document Control			
Version Number	Date issued	Author	Update information
v1	08/06/2021	John Brandist, Ian Graham	Initial version of document
v1.1	05/05/2022	John Brandist	Subject Matter Expert role renamed as Health and Safety Lead. New additions concerning lease/licence arrangements and decommissioning. References to BS EN 12469:2000 and BS 5726:2005 added.
Owner: John Phillips, Director of Health & Safety			Authorised By: John Phillips, Director of Health & Safety
Source Location: M:\SF\OCH 2006\Management System\02 Develop and Implement Controls\04 SOPs and COPs(B5)\10 LEV			Approval Date: 20/05/2022
Published Location: Web Page			Review date: June 2025



Appendix A – Responsibility Grid for LEV

Roles and Responsibilities - Statutory Inspections & Compliance (Future State)

Statutory Area	Corporate Approach	ACCOUNTABLE		RESPONSIBLE		TASK	SUPPORT		INFORM	ASSURANCE		
		Accountable	Responsible	Delegated Responsibility	Delegated Responsibility	Manager or Contract Manager	Department Point of Contact	Subject Matter Expert (Adviser)	Inform	First Line	Second Line	Third Line
Fume Cabinets & LEV (Fixed)	Yes	Group Finance Director	Director of Estates	Operations Director Estates	Head of Maintenance	Contract Supervisor, Estates Contracted Out Services	Technical Services / Facilities Management	Chemical Adviser, Health and Safety Services	Technical Services Manager / Facilities Manager Users	PI/Supervisor (user checks) Technical Services Manager (planned and remedial maintenance)	Estates Compliance and Assurance Departmental Assurance/Compliance Health & Safety Officers	Health and Safety Services Internal Audit (Governance)
Fume Cabinets & LEV (Non Fixed)	Yes	Group Finance Director	Director of Estates	Operations Director Estates	Head of Maintenance	Contract Supervisor, Estates Contracted Out Services Technical/Facilities Staff	Technical Services	Chemical Adviser, Health and Safety Services	Technical Services Manager Users	PI/Supervisor (user checks) Technical Services Manager (planned and remedial maintenance)	Departmental Assurance/Compliance Health & Safety Officers	Health and Safety Services Internal Audit (Governance)
Biological Safety Cabinets	No	Provost	Head of Department	Senior Admin	Technical Manager	Technical/Facilities Staff	Technical Services	Biological Adviser, Health and Safety Services	Technical Services Manager Users	PI/Supervisor (user checks) Technical Services Manager (planned and remedial maintenance)	Departmental Assurance/Compliance Health & Safety Officers	Health and Safety Services Internal Audit (Governance)

Corporate Approach where arrangements for statutory inspection and compliance are centrally managed by Estates.

- R = Responsible** who is in charge of recommending what work is done and making sure it happens.
- A = Accountable** who has final decision power on the work.
- T= Task** who actually does the work (or arranges for it to be done).
- S = Support** who is involved to provide support to the work.
- I = Informed** who is informed that the work has been done (or will be started).
- A = Assurance** who is checking that the work is done and procedures are followed.

Appendix B – Training Matrix

A matrix of qualification and competence requirements for individuals performing the role specified below

		Competence Requirement						
		Internal Training		External Training				
		Moodle course "Health and Safety - Risk Assessment training"	Moodle course "LEV System User Training"	BOHS P600 - Methods for Testing the Performance of LEV*	BOHS P601 - Thorough Examination and Testing of LEV*	BOHS P602 - Basic Design Principles of LEV*	BOHS P604 - Performance Evaluation, Commissioning and Management of LEV*	Mechanical Engineering Qualification*
Role	Accountable Person	X						
	Responsible Person	X	R					
	H&S Lead	X	X	R	R	R	R	
	Head of Department	X						
	Technical Services Manager/Facilities Manager	X	X					
	Department Point of Contact	R	X					
	PI/Supervisor	X	X					
	MSC User	X	X					
	Estates Maintenance Operative	R	R					
	MSC System Specifier	X	X					
	Competent Person (TEXT) ¹				X			
	MSC System Designer ¹	X	X			X		X
MSC System Commissioner ¹				X		X		

Key to Symbols

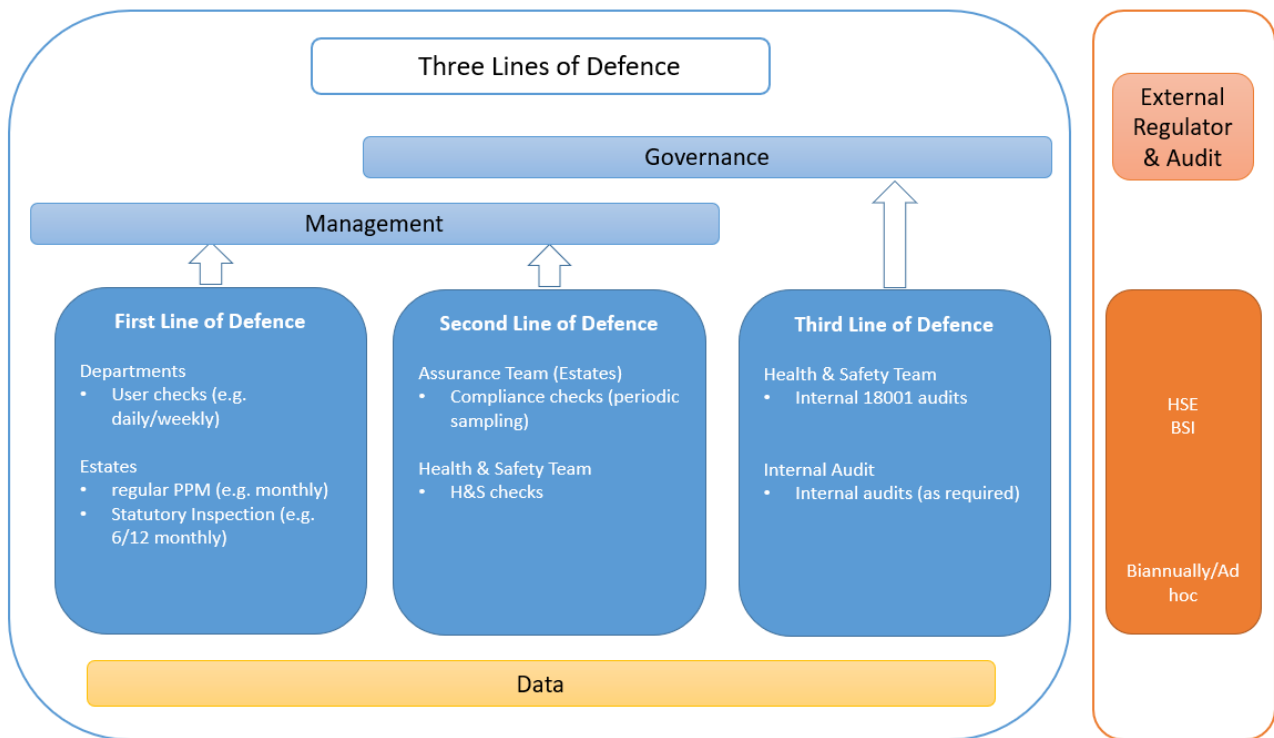
X = Required

R = Recommended

* = Or equivalent e.g., alternative training or demonstrated by relevant experience and knowledge.

¹ = Routes to becoming professionally competent in the design, supply, commission and test of LEV systems include qualifications through British Occupational Hygiene Society (BOHS), Chartered Institution of Building Services Engineers (CIBSE) and Institution of Local Exhaust Ventilation Engineers (ILEVE).

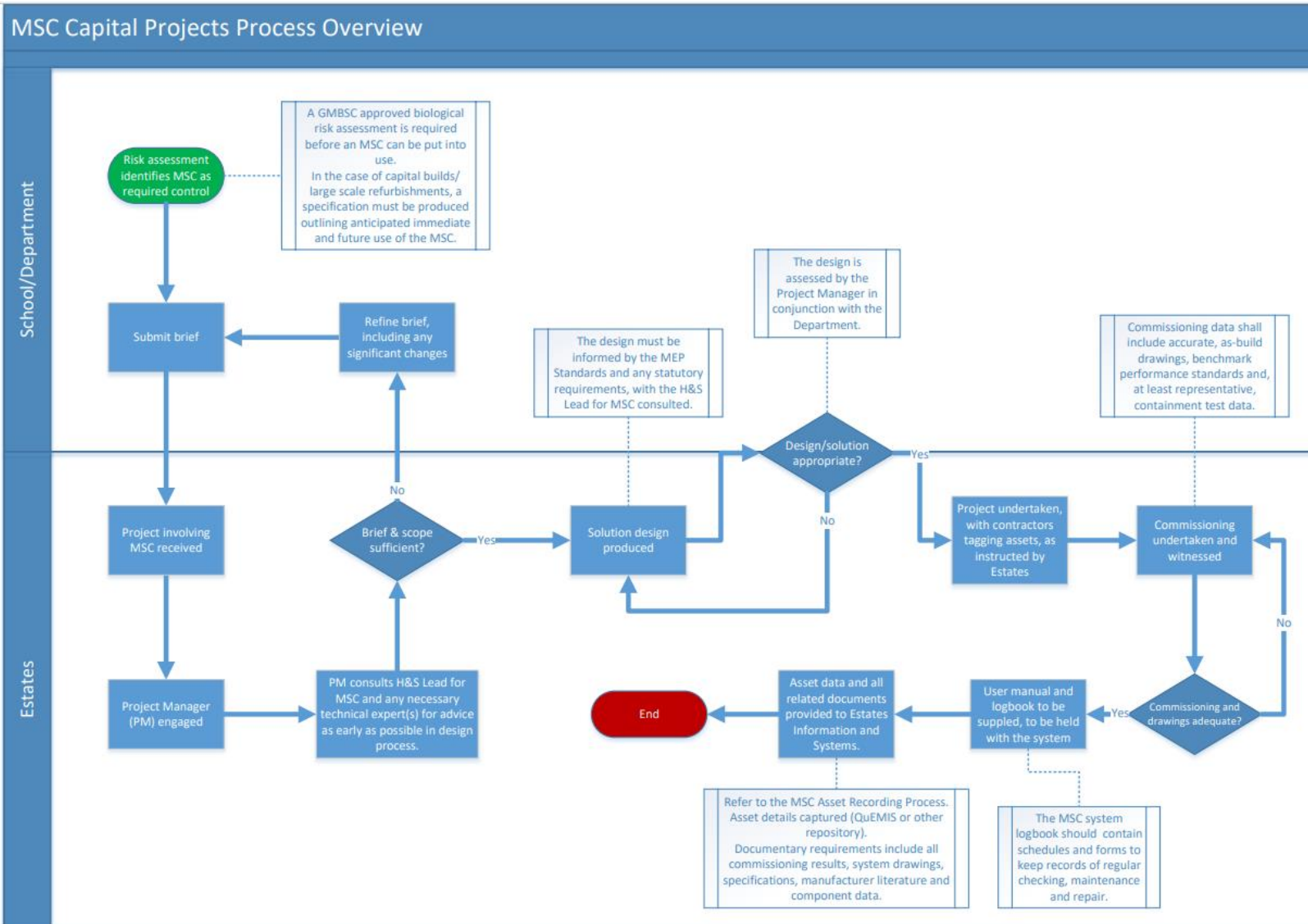
Appendix C – Assurance: Three Lines of Defence



Notes:

- For MSC, the departments are also responsible as ‘first line of defence’ for statutory inspections.
- Additional external regulators are applicable for MSC, i.e., DEFRA

Appendix D – MSC Capital Projects Process Overview



Appendix E – MSC Asset Recording Process Overview

