

# ***Department of Physics & Astronomy***

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## **Health and Safety Policy**

**April 2024**



## General Statement of Policy – School of Natural Sciences

Staff and students with the School of Natural Sciences carry out an extremely wide range of activities, some of which involve risks that are new, or unpredictable, or just different. We cannot provide a risk-free environment. We can, however, strive to ensure that all of us make well-informed decisions, and are responsible and considerate about the risks we encounter during our studies and work.

Everyone has an important part to play, but clear leadership from senior managers is crucial and underpins all our actions. I recognise this, and accept my overall responsibility for the School of Natural Sciences willingly, as per the School's guidance document on Health and Safety Roles and Responsibilities.

I expect everyone within the School to work together to achieve good health & safety management practices that are compliant with statute, are comprehensive, effective and robust, but are also proportionate and achievable in the context of a research intensive organisation.

The School is divided into the following Departments: Chemistry, Materials, Mathematics, Physics and Astronomy, Earth and Environmental Sciences.

Each Department has an individual policy that sets out the key guiding principles on health & safety management. The accompanying organisation and arrangements describe in more details what is expected of managers, staff and students within the Department.

Each Departmental Policy is formally approved by the Departmental Health and Safety Committee. It is disseminated to all staff and students within the Department and is reviewed annually or when significant changes occur.

We aspire to excellence in all our endeavours and health and safety management is no exception.

Head of School: Professor Christopher Hardacre



Signed: \_\_\_\_\_

Date: 31/03/21

## General Statement of Policy – Department of Physics and Astronomy

Staff and students with the Department of Physics and Astronomy carry out an extremely wide range of activities, some of which involve risks that are new, or unpredictable, or just different. We cannot provide a risk-free environment. We can, however, strive to ensure that all of us make well-informed decisions, and are responsible and considerate about the risks we encounter during our studies and work.

The Department of Physics and Astronomy is part of the School of Natural Sciences. This Departmental Policy sets out the key guiding principles on health & safety management. The accompanying organisation and arrangements describe in more detail what is expected of managers, staff and students within the Department.

Everyone has an important part to play, but clear leadership from senior managers is crucial and underpins all our actions. I recognise this, and accept my overall responsibility willingly, as per the School's guidance document on Health and Safety Roles and Responsibilities.

I expect everyone within the Department to work together to achieve good health & safety management practices that are compliant with statute, are comprehensive, effective and robust, but are also proportionate and achievable in the context of a research intensive organisation.

This Policy is formally approved by the Departmental Health and Safety Committee. It is disseminated to all staff and students within the Department and is reviewed annually or when significant changes occur.

We aspire to excellence in all our endeavours and health and safety management is no exception.

Head of Department: Christopher Parkes

Signed:



Date: 2<sup>nd</sup> April 2024

# Contents

General Statement of Policy – School of Natural Sciences.....	2
General Statement of Policy – Department of Physics and Astronomy .....	3
1. Organisational Control, Responsibilities and Roles .....	11
1.1. Duties and Responsibilities of Head of School (HoS) .....	11
1.2. Duties and Responsibilities of Head of Department.....	11
1.3. Organisational Chart .....	12
1.4. Duties and Responsibilities of School Operations Manager (SOM).....	13
1.5. Duties and Responsibilities of Academic Supervisors and Line Managers .....	13
1.6. Duties and Responsibilities of Staff and Visitors.....	15
1.7. Duties and Responsibilities of Students .....	15
1.8. Duties and Responsibilities of anyone working off-site.....	16
1.9. Duties and Responsibilities of the Safety Advisor .....	16
1.10. Duties and Responsibilities of the Biological / Genetically Modified Organisms Safety Advisor (BSA) .....	17
1.11. Duties and Responsibilities of the Laser Safety Advisor (LSA).....	17
1.12. Duties and Responsibilities of the Non-ionising Advisor .....	18
1.13. Duties and Responsibilities of the Radiation Protection Supervisor (RPS) .....	19
1.14. Duties and Responsibilities of First Aiders .....	20
1.15. Duties and Responsibilities in relation to Fire Arrangements within the Department 21	
1.15.1. Fire Evacuation Marshals (FEMs) duties include: .....	22
1.15.2. Duties of all Staff and Students in relation to Fire include to:.....	23
1.16. Duties and Responsibilities of Display Screen Equipment (DSE) Assessors .....	24
1.17. Communication and Consultation .....	25
1.18. Liaison with other bodies within and external to the University .....	25
1.19. HSW Committee – Schuster and Alan Turing.....	25
1.19.1. Terms of Reference .....	25
1.20. JBO Health and Safety Committee.....	28
1.21. Monitoring and Review .....	29
1.21.1. Informal Checks.....	29
1.21.2. Inspections .....	29

1.21.3.	Accident Data Trending.....	30
1.21.4.	Safety Sampling.....	30
1.21.5.	Monitoring Report.....	30
1.21.6.	HASMAP Audits .....	30
2.	General Arrangements .....	30
2.1.	Accident, Incident and ill-health Reporting .....	30
2.2.	Asbestos in Buildings.....	31
2.2.1.	Jodrell Bank Observatory.....	32
2.2.2.	Asbestos in Equipment .....	32
2.3.	Bicycles.....	32
2.4.	Bomb Threat.....	33
2.5.	Building Access, Opening Times and Out of Hours .....	33
2.5.1.	Building Access Arrangements.....	33
2.5.2.	Out-of-Hours .....	34
2.6.	Building and Personal Security.....	34
2.7.	Bullying, Harassment and Discrimination .....	35
2.8.	Children and Young Persons .....	35
2.9.	Contractors.....	36
2.9.1.	Contractors and visitors at Jodrell Bank Observatory .....	36
2.10.	Cooperation with other organisations .....	37
2.11.	COVID-19.....	37
2.11.1.	Working from Home.....	38
2.12.	Disability Advisory and Support Service (DASS) .....	38
2.13.	Fire and Emergency Evacuation.....	39
2.13.1.	Alarm.....	39
2.13.2.	PEEP.....	40
2.13.3.	Fire extinguishers .....	41
2.13.4.	Corridors.....	41
2.13.5.	Fire Curtains .....	41
2.14.	First Aid.....	42
2.14.1.	Diphoterine .....	42
2.15.	General Domestic Information.....	43
2.16.	Housekeeping .....	43

2.17.	Inductions .....	44
2.17.1.	Staff Induction .....	44
2.17.2.	Student Inductions .....	46
2.18.	Intranet .....	48
2.19.	Lecture Theatres.....	48
2.20.	Letter Bombs.....	48
2.21.	Liaison with Estates and Building Faults.....	49
2.22.	Lifts.....	49
2.22.1.	Passenger Lifts.....	49
2.22.2.	Goods Lift .....	50
2.23.	Lone Working.....	50
2.24.	New and Expectant Mothers .....	51
2.25.	Occupational Health and Health Surveillance .....	52
2.26.	Open Days/Conferences and Other Events .....	52
2.27.	Procedure for non-compliance.....	53
2.28.	Risk Assessments .....	54
2.29.	Safety Concerns .....	55
2.30.	Smoking.....	55
2.31.	Terrorist Attack (Fire Arms and Weapons Attack).....	55
2.32.	Training.....	56
2.32.1.	Competency Records .....	57
2.33.	Travel .....	57
2.33.1.	Travel.....	57
2.33.2.	Export Control .....	58
2.33.3.	Travel to high risk countries.....	58
2.34.	Vacating Premises and Occupying Premises .....	59
2.35.	Staff Exit Checklist.....	59
2.36.	Violence .....	60
2.37.	Waste Non-Hazardous .....	60
2.38.	Work Experience / Placement Students / Study Abroad .....	61
3.	General Workplace Hazards .....	62
3.1.	Display Screen Equipment (DSE).....	62
3.1.1.	Free eye tests.....	62

3.2.	Driving at work.....	63
3.3.	Electrical Equipment .....	63
3.4.	Fieldwork.....	66
3.5.	Manual Handling.....	66
3.6.	Offices and PC Clusters.....	67
3.7.	Slips, Trips and Falls.....	68
3.8.	Stress and Anxiety .....	68
3.8.1.	Wellbeing .....	70
4.	Laboratory and Workshop Safety Arrangements.....	71
4.1.	Biological work in Schuster .....	71
4.1.1.	Biological Risk Assessment and application.....	71
4.1.2.	Biological Safety Training.....	71
4.1.3.	Inspection and monitoring.....	72
4.1.4.	Health surveillance and fitness to work.....	72
4.2.	Chemical Safety.....	72
4.2.1.	Fitness to work Certificate.....	73
4.2.2.	Handling, storage and disposal .....	74
4.2.3.	Transporting chemicals within or between buildings.....	75
4.2.4.	Carcinogens, Mutagens, Reproductive Toxins (CMRs) and Sensitisers.....	75
4.2.5.	Polychlorinated biphenyls (PCBs) .....	76
4.2.6.	Drug Precursors and Chemical Weapons.....	77
4.2.7.	Explosive Substances .....	77
4.2.8.	Poisons .....	78
4.2.9.	Hydrofluoric acid.....	78
4.2.10.	Mercury.....	78
4.2.11.	Accidental Spillage and Loss of Containment .....	79
4.3.	Confined Spaces .....	80
4.4.	Food and Drink.....	80
4.5.	Glassware .....	80
4.6.	Hazardous Waste .....	80
4.7.	Laboratory and Workshop Equipment.....	82
4.7.1.	Machinery Equipment (workshops).....	82
4.7.2.	Training .....	83

4.7.3.	Guards.....	83
4.8.	Laboratory refrigerators and freezers.....	84
4.9.	Laundry Service .....	84
4.10.	Legionella.....	84
4.11.	Laser Safety in Physics .....	85
4.11.1.	Laser Classification .....	85
4.11.2.	The use of laser pointers.....	86
4.11.3.	Purchasing lasers or a change in use/location.....	87
4.11.4.	Laser Installation and Service Visits .....	87
4.11.5.	Risk assessments .....	87
4.11.6.	Personal Protective Equipment (PPE) – Laser safety eyewear .....	87
4.11.7.	Useful videos .....	88
4.11.8.	Accidents and Near-miss events .....	88
4.12.	Lift and Crane Equipment .....	88
4.12.1.	Training courses .....	89
4.12.2.	Schuster imposed loads .....	89
4.13.	Local Exhaust Ventilation (LEV) .....	90
4.14.	Nanomaterials (including graphene) .....	91
4.15.	Non-Ionising Radiation .....	92
4.15.1.	Microwave ovens .....	92
4.15.2.	UV sources.....	92
4.15.3.	Visors.....	93
4.15.4.	Electromagnetic fields.....	93
4.16.	Noise .....	94
4.17.	Open plan and shared laboratories.....	95
4.18.	Overnight and long term running of experiments or equipment .....	95
4.19.	Personal Protective Equipment (PPE).....	95
4.20.	Prescription Safety Glasses.....	98
4.21.	Pressure Systems .....	98
4.21.1.	Gas Cylinder Safety.....	99
4.21.2.	Acetylene.....	101
4.21.3.	Regulators .....	101
4.21.4.	Emergency arrangements .....	102



4.21.5.	Gas Cylinder Manifolds .....	102
4.21.6.	Gas Alarms and Oxygen Depletion Sensors .....	103
4.21.7.	Cryogenic liquids .....	103
4.21.8.	Cryostats.....	105
4.22.	Radiological Safety.....	106
4.23.	Safety Signs .....	107
4.24.	Soldering and Spot Welding .....	108
4.25.	Suitable Clothing .....	109
4.26.	Vibration .....	109
4.27.	Welding.....	110
4.28.	Working at height.....	110
5.	Jodrell Bank Observatory - Organisational Control, Responsibilities and Roles .....	112
5.1.	Health and Safety accountability at JBO .....	112
5.1.1.	Jodrell Bank Governance Group .....	112
5.1.2.	Operations Group .....	113
5.2.	JBO Management Team meeting.....	113
5.2.1.	JBO Health and Safety Committee.....	113
5.2.2.	JBO Staff and Visitors.....	113
6.	Local Arrangements – Jodrell Bank Observatory.....	115
6.1.	Abrasive wheels.....	115
6.2.	Driving and Vehicles.....	115
6.3.	Electrical arrangements .....	115
6.3.1.	User checks .....	116
6.3.2.	High voltage work .....	117
6.3.3.	Live equipment .....	117
6.4.	Fire Safety / Emergency procedures.....	117
6.4.1.	Fire Prevention.....	118
6.4.2.	Fire Extinguishers.....	118
6.5.	First Aid.....	119
6.6.	Lone Working .....	119
6.7.	Mobile Elevated Platforms/ Cherry Pickers .....	120
6.8.	Optical Fibre.....	120
6.9.	Outstations .....	121

6.10.	Unmanned Aircraft .....	121
6.11.	Telescopes .....	121

# 1. Organisational Control, Responsibilities and Roles

## 1.1. Duties and Responsibilities of Head of School (HoS)

The Head of School is accountable to the Dean for the line management of the Heads of Department within the School. As such the responsibility for health and safety is cascaded through the management structure and requires that the Head of School asks suitable pertinent questions of the Heads of Department and that feedback on health and safety performance is provided to the Dean.

The Heads of School will be members of the Faculty Health, Safety and Wellbeing Committee and will attend the quarterly meetings, alongside the Heads of Department.

## 1.2. Duties and Responsibilities of Head of Department

The Heads of Department have delegated responsibility for health and safety within their Department or as a consequence of their activities, and for any additional activities as agreed and delegated to them (e.g. where they accept responsibility for day-to-day safety arrangements for staff who have other line managers, for reasons of geographical location). This is defined in the [University's Health and Safety Arrangement Chapter 18](#) (working across organisational boundaries). The Head of Department is acting on behalf of the Head of School and must provide assurance to the Head of School that health and safety is being managed to the high standards expected by the University in their Department.

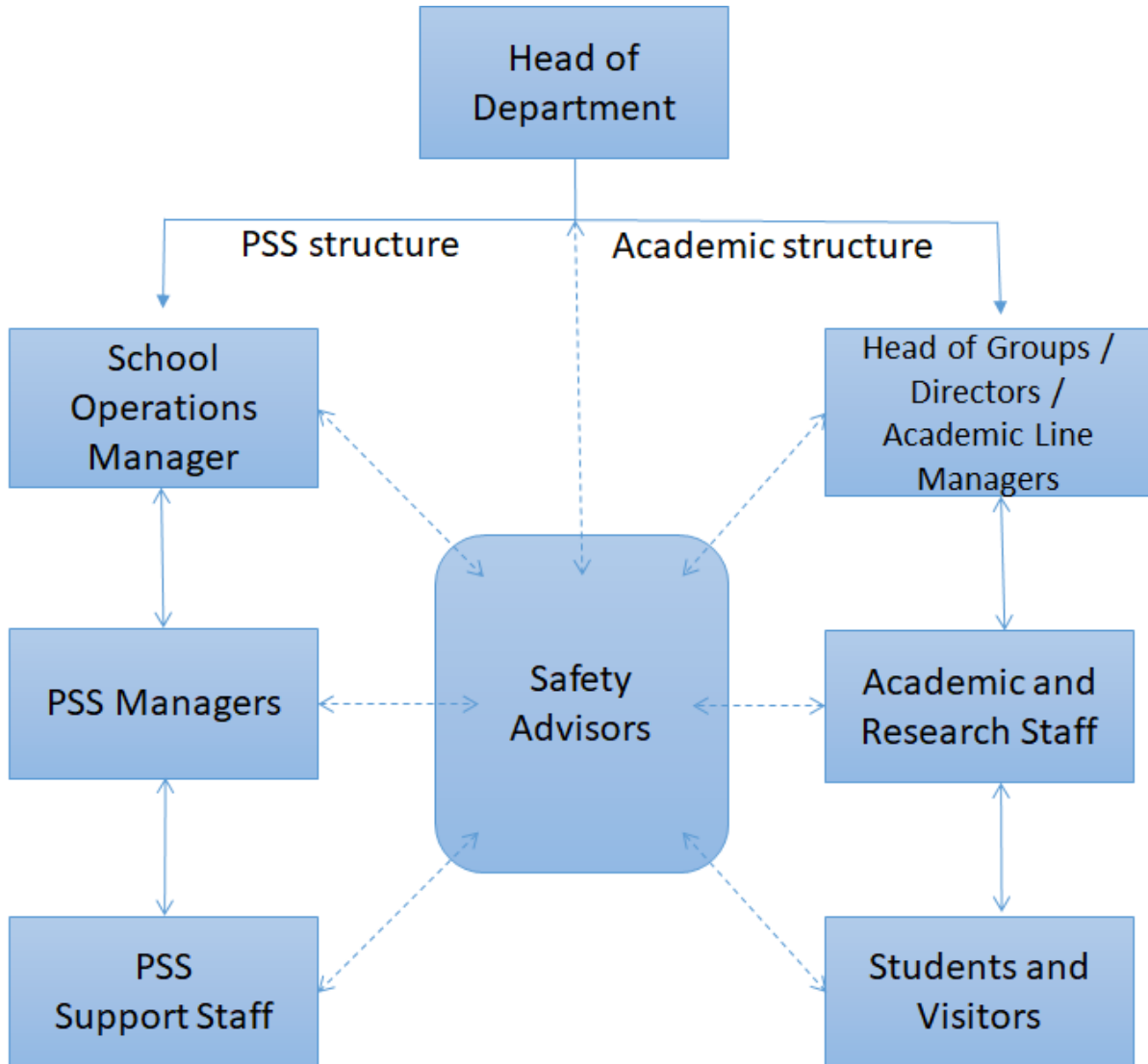
The Head of Department must ensure they are aware of the provisions of the [University's Health and Safety Policy](#) and the requirements of legislation. In addition, each Department will have a local Health and Safety Policy and arrangements in place. More detailed information on the specific roles and responsibilities is provided in the policy and the Head of Department should familiarise themselves with these requirements.

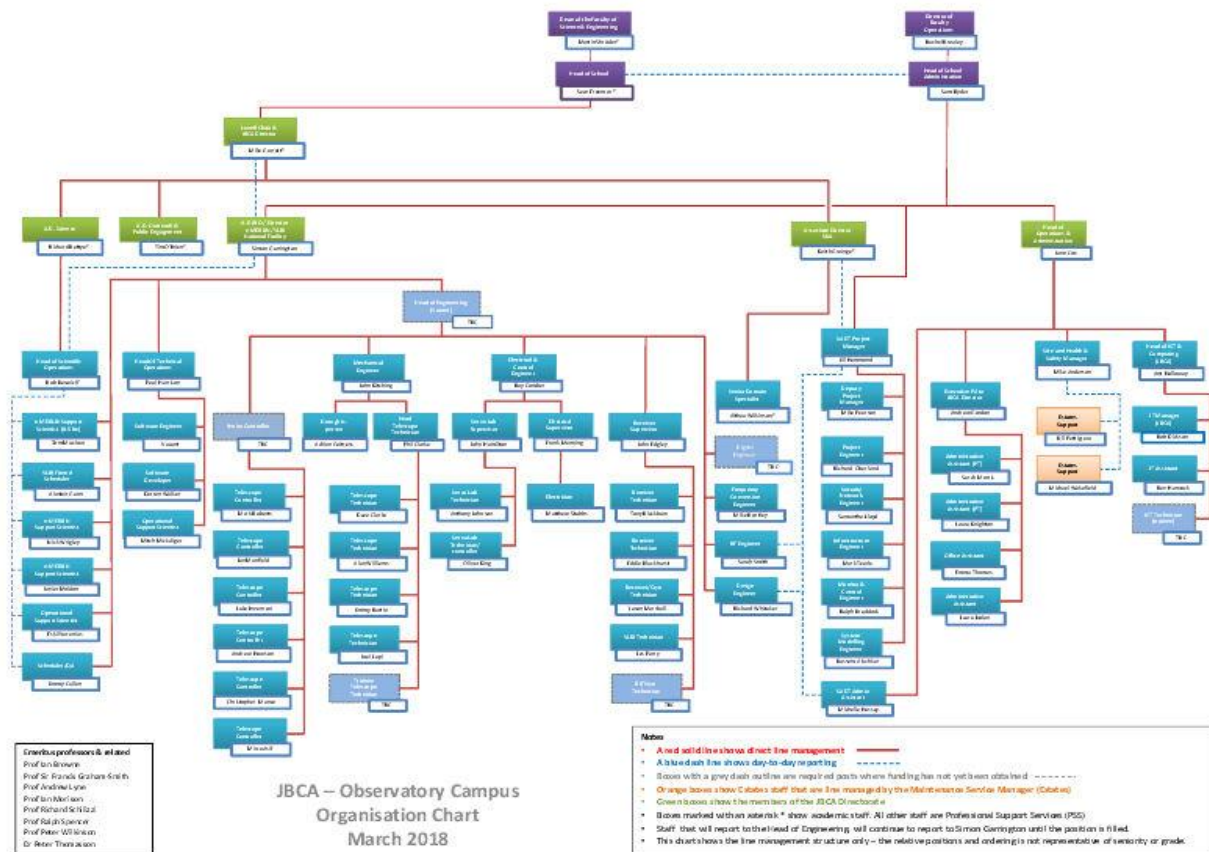
The Head of Department should establish and chair a Departmental Health and Safety Committee which will fulfil the functions of a Health and Safety Committee in accordance with the [University's Health and Safety Arrangement Chapter 14](#) (this also includes details of membership). The Committee should meet quarterly and the Head of Department will report to the School Senior Leadership Team on a rotational basis on any health and safety matters that arise within the Department. Heads of Department will update the School Leadership Team periodically on lessons learnt and to share best practice, based on local incidents and near misses.

All Heads of Department will be members of the Faculty Health, Safety and Wellbeing Committee and will attend the quarterly meetings, alongside the Heads of School.

### 1.3. Organisational Chart

The organisational chart represents the lines of managerial and organisational responsibility in regards to health and safety **only** (other line management in relation to Human Resources matters may be different). Lines of communication are shown through a dotted line.





## 1.4. Duties and Responsibilities of School Operations Manager (SOM)

The Head of School Operations, School Operations Manager and Deputy School Operations Manager provide a supporting role to the Head of School and Head of Department in ensuring that a high standard of health and safety is adhered to across the School and Departments.

## 1.5. Duties and Responsibilities of Academic Supervisors and Line Managers

The health and safety management of research projects is the responsibility of the Head of Group but is usually delegated to research supervisors; this is assumed unless an alternative arrangement is agreed with the Head of Group and Head of Department and recorded appropriately.

Managers and Supervisors are responsible for:

- Understanding and implementing the appropriate arrangements of the Department and the University health and safety policy.
- Providing and maintaining safe places of work, safe means of access and egress, plant, equipment and systems of work, working environments and arrangements for the safe use, handling, storage and transport of articles and substances.

- Ensuring all risk assessments are in place **before work commences** and that they are suitable and sufficient.
- Ensuring all control measures are carried out, the effectiveness of the risk assessments are reviewed regularly as the research proceeds and that everybody involved in the work activity has read and understood the risk assessment.
- Ensuring that costs of implementing suitable risk control measures are included in project funding, to ensure appropriate resources for safety equipment, plant maintenance disposing of any hazardous substances or material and safety training are provided.
- Maintaining suitable records of exposure to substances hazardous to health in accordance with University policies and guidance.
- Disseminating safety information effectively.
- Ensuring all personnel in their area receive appropriate induction, information, instruction, training, supervision and support to safely execute their work with appropriate records kept.
- Arranging particular care of less experienced personnel. Ensuring they are trained and supervised until fully competent.
- Ensuring that all staff or research group members respond to and co-operate with any requests for them to attend for training, health surveillance and advice.
- Consulting additional expertise as and when competence cannot be provided within the team.
- Liaising with the Department's safety advisor, Faculty safety advisors and other special hazards advisors and providing information on request about the risks and control measures.
- Promoting best practice and maintaining good health and safety standards continuously.
- Monitoring performance regularly and taking appropriate actions to rectify all issues identified.
- Ensuring that all new staff and temporary staff receive an appropriate Department health and safety induction and additionally are inducted locally to the specific hazards in their respective areas.
- Ensuring that any health and safety rules, procedures, and systems of work are followed, and any necessary protective clothing or safety equipment provided is maintained, used and stored appropriately.
- Ensuring all personnel in their area know how to disclose health issues that may affect their work or that have arisen as a result of their work.
- Reporting and investigating accidents, near-misses, incidents and dangerous occurrences in a timely manner, according to the University's policy and statutory requirements.
- Keeping up to date with the relevant health and safety legislation, policies and standards.
- Recognising their own limitations and seeking health and safety advice and guidance whenever necessary.

## **1.6. Duties and Responsibilities of Staff and Visitors**

These are the general duties applicable to all staff and visitors although, additional responsibilities may be specified:

- To read and understand the Department and University Health and Safety policies and carry out work in accordance with their requirements and any safe system of work or procedure so as not to endanger themselves or any person who may be affected by their activities.
- To immediately report any hazard or defect that could affect the health and safety of staff or others to their line manager or Safety Advisor.
- Not to misuse or interfere with any equipment, including any health and safety equipment or clothing provided.
- To receive appropriate induction, training and supervision in order to work safely when instructed to do so.
- Not to operate any equipment or facility unless adequate training, instruction or supervision is in place.
- To report all accidents, incidents, ill-health and near-misses to their line manager and Safety Advisor and co-operate with all investigations.
- To assess, know and understand the risks arising from their work activities and to implement the control measures identified by following safe systems of work, procedures and instructions and to wear any protective clothing or equipment provided as necessary.
- To take particular care of less experienced members of staff or students and ensure they are properly supervised until they have been trained and deemed competent to work with less supervision.
- To know the evacuation procedure and location of assembly point in the event of a fire or other emergency.
- To be familiar with the location of first aid facilities and first aiders.
- To ensure that the procedures for safe storage, use and disposal of any hazardous materials are followed, paying particular regard to those covered by specific legislation.
- To keep working areas, access and egress free from obstructions at all times.
- To attend any health surveillance as requested.
- To avoid improvising or taking short-cuts that would entail unauthorised and unnecessary risks.
- To recognise own limitations and seek health and safety advice and guidance whenever necessary.

## **1.7. Duties and Responsibilities of Students**

These are the general duties applicable to all students, both undergraduate and postgraduate:

- To read and understand the Department and University Health and Safety policies and carry out studies in accordance with their requirements and any safe system of work or procedure so as not to endanger themselves or any person who may be affected by their activities.
- To undertake appropriate training, induction and supervision in order to work safely.
- To immediately report any hazard or defect that could affect the health and safety of others to their supervisor or Safety Advisor.
- Not to misuse or interfere with any equipment, including any health and safety equipment or clothing provided.
- Not to operate any equipment or facility unless adequate training, instruction or supervision is in place.
- To assess, know and understand the risks arising from their work activities and to implement the control measures identified by following safe systems of work, procedures and instructions and to wear as necessary any protective clothing or equipment provided.
- To know the evacuation procedure and location of assembly point in the event of a fire or other emergency.
- To be familiar with the location of first aid facilities and first aiders.
- To ensure that the procedures for safe storage, use and disposal of any hazardous materials are followed, paying particular regard to those covered by specific legislation.
- To report to staff all equipment faults, building defects and any hazards in a timely manner.
- To report all accidents, incidents, ill-health and near-misses to the supervisor and Safety Advisor and co-operate with all investigations.
- To attend any health surveillance as requested.
- To keep working areas, access and egress free from obstructions at all times.
- To avoid improvising or taking short-cuts that would entail unauthorised and unnecessary risks.
- Recognise own limitations and seek health and safety advice and guidance whenever necessary.

### **1.8. Duties and Responsibilities of anyone working off-site**

Any individual working off-site must abide by the local rules of that organisation. The Department expects any individual working off-site to work safely.

### **1.9. Duties and Responsibilities of the Safety Advisor**

The primary responsibilities of the Safety Advisor are to advise and brief the Head of Department and other staff members and students on safety matters, operationalise the local Health and Safety policies and to liaise between the Department and the Faculty/University Safety Co-ordinator and other Safety Co-ordinators/Advisors.



The Safety Advisor will prepare and keep up-to-date a Statement of Department Health and Safety Policy for approval by the Head of Department, Department Health and Safety Committee and Head of School, which describes the specific organisation and arrangements within the Department.

Specialist Safety Advisors are available in Biological / Genetically Modified Organisms, Laser and Radiation Protection and will carry out the duties outlined below in sections 1.10, 1.11 and 1.12 within their own specialism.

### **1.10. Duties and Responsibilities of the Biological / Genetically Modified Organisms Safety Advisor (BSA)**

In accordance with Chapter 3 of the University of Manchester's Health and Safety Arrangements, the biological activities carried out in the Department are overseen by FSE Biological /GM Safety Committee. The Faculty of Science and Engineering (FSE) has appointed Biological Safety Advisors (BSAs) to advise on the Health and Safety arrangements relating to work with biological material as listed in Chapter 3 within the Department. The duties of the BSA are detailed in Chapter 3.

### **1.11. Duties and Responsibilities of the Laser Safety Advisor (LSA)**

The Laser Safety Advisor is appointed by, and responsible to the HoD. The LSA plays a fundamental role in assisting the University Laser Safety Officer (LSO) and ensuring that the University complies with the requirements of the Health and Safety at Work Act 1974 and the Management of Health and Safety at Work Regulations 1999. The LSA must be officially appointed by letter by the Head of Department, a copy of which must be sent to the LSO. The LSA should be directly involved with the Department's work with lasers, preferably in a line management position, to ensure that the work is done in accordance with the University Laser Safety Arrangements chapter and follows the University Laser Safety Manual. It is recognised that in some large departments the LSA may not be the immediate line manager or supervisor overseeing the work with lasers. In these cases, the supervisor/line manager takes on these duties.

General duties and responsibilities include:

- To regularly inspect (at least annually) all laser activities to ensure that safety requirements are followed.
- To take an active role in the Department Health and Safety Committee and submit a report at each meeting.
- To attend the University LASER TAG meetings.
- To assist the LSO in cross-auditing of other Departments.
- To record the findings of the inspections and to report to the LSO and H&S Committee.

- To ensure that a Laser Safety Management Programme (LSMP) workbook is maintained for all activities, which will include risk assessments and local rules.
- To inform the LSO and H&S Committee of any new or significantly different activities involving lasers.
- To inform the LSO and H&S Committee of details of new or newly acquired lasers.
- To inform the LSO of details of changes in users.
- To ensure that all users have access to a copy of the University Laser Safety Manual (ULSM).
- To ensure that accidents involving lasers are reported and investigated.
- To ensure that all users have satisfied that they are competent to work with lasers safely. This must occur before they start working with lasers in the University, and will normally consist of ensuring the users have been taken through the safety checklist. This task can either be carried out by the LSA or the Supervisor/Principal Investigator, or both.
- To identify staff or students who would benefit from appropriate occupational health surveillance.
- To ensure all users have attended or are booked to attend an appropriate University Laser Safety Training Session.
- To ensure regular refresher training is carried out.
- To recognise own limitations and seek advice and guidance whenever necessary.

It is essential that the LSA is informed of the intention to purchase any new laser systems or the change of use of existing systems to ensure the relevant safety checks and documentation can be completed **PRIOR** to any use.

### **1.12. Duties and Responsibilities of the Non-ionising Advisor**

The Non-ionising radiation advisor is appointed by, and responsible to the HoD. The non-ionising radiation advisor reports directly to the Head of Department on all issues concerning non-ionising safety in School of Natural Sciences/Department of Physics and Astronomy and have executive authority to halt work if they believe there is an immediate risk to staff, students, property, or compliance. They will keep themselves fully briefed to a level of competence that will allow them to fulfil this role affectively.

General duties and responsibilities include:

- Recognise that responsibility of compliance with the Regulations lies with the Head of School; this responsibility cannot be delegated to the School Safety Advisor
- Understand the requirements of the relevant legislation in so far as they affect the work of the School
- Have the personal authority and be given the time to carry out the full functions of the role
- Understand the precautions needed to restrict exposure to non-ionising radiation

- Monitor to ensure that all work with sources of non-ionising radiation within his/her area of responsibility is taking place in accordance with current legislation and accepted good practice
- Monitor the inventory of non-ionising radiation sources within his/her area; checking that they remain at their specified locations under appropriate management control
- Provide non-specialist advice to staff, students and management in regard to non-ionising radiation protection matters
- Refer promptly to the Head of School any radiation protection problem that cannot be resolved locally on a time scale commensurate with the risk.
- Liaise with University Safety Co-ordinators and other central advisers in Health and Safety matters
- Attend meetings of the relevant committees when required and in particular the Non-Ionising Radiation Safety Technical Advisory Group
- Ensure that accidents/incidents involving non-ionising radiation are reported and investigated
- Disseminate non-ionising radiation protection information and reports to appropriate staff and students.
- Ensure that new members of the School receive adequate information, instruction and training with respect to non-ionising radiation protection matters
- Identify staff or students in his/her area who would benefit from appropriate radiation protection training or occupational health surveillance.
- Co-ordinate the implementation of advice from the Non-Ionising Radiation Technical Advisor
- Periodically (and not less frequently than annually) review non-ionising radiation protection procedures within his/her area to ensure that the training received by all individuals is reinforced by safe practice.

### **1.13. Duties and Responsibilities of the Radiation Protection Supervisor (RPS)**

The Department Radiation Protection Supervisor (RPS) is appointed by and responsible to the HoD. The RPS plays a fundamental role in assisting the University Radiation Safety Unit (RSU) and ensuring that the University complies with its legal requirements. The RPS must be officially appointed by letter by the Head of Department, a copy of which must be sent to the RPS. The RPS should be directly involved with the Department's work with ionising radiation, preferably in a line management position, to ensure that the work is done in accordance with The Ionising Radiations Regulations 2017, the Environmental Permitting Regulations 2016 and University Health and Safety Arrangements: Chapter 25 Ionising Radiation Safety. It is recognised that in some large departments the RPS may not be the immediate line manager or supervisor overseeing the work with ionising radiation. In these cases, the supervisor/line manager takes on these duties.

General duties and responsibilities include:

- Monitoring to ensure that all radiological work within the Department is taking place within agreed Local Rules, current legislation and accepted good practice.
- Monitoring the inventory of radiation sources and nuclear materials within the Department and checking that they remain at their specified locations under appropriate management control; and that they are ultimately disposed of by an official route.
- Monitoring the list of radiation workers within the Department. The Radiation Safety Unit (RSU) must be informed of any changes.
- Providing non-specialist advice to staff, students and management in regard to radiation protection matters.
- Referring promptly to the Head of Department any radiation protection problem that cannot be resolved locally on a time scale commensurate with the risk.
- Liaising with fellow RPSs, the site RPA, the Head of Safety Services, University Safety Co-ordinators and other central advisors in Health and Safety matters.
- Taking an active role in the Department Health and Safety Committee and submitting an RPS report at each meeting.
- Attending the Ionising Radiation Safety Working Group meetings.
- Ensuring that accidents involving radiation are reported and investigated.
- Disseminating radiation protection information and reports to appropriate staff and students.
- Ensuring that new members of the Department receive adequate information, instruction and training with respect to radiation protection matters.
- Identifying staff or students who would benefit from appropriate radiation protection training or occupational health surveillance.
- Co-ordinating the implementation of advice from the RSU.
- Periodically (and not less frequently than annually) reviewing radiation protection procedures within the Department through inspections.
- Ensuring all users have attended or are booked to attend an appropriate University [TLCX215E Radiation awareness training](#).
- Ensuring regular refresher training is carried out.
- Ensuring dosimetry is occurring and being monitored, where necessary.
- Recognising own limitations and seek advice and guidance whenever necessary.

#### **1.14. Duties and Responsibilities of First Aiders**

The Head of Department is responsible for first aid provisions within the Department and must ensure:

- There are appropriate numbers of staff members who can render first aid to its employees, students and visitors if they are injured or become ill at work.
- That first-aiders receive suitable training to carry out these requirements and, so far as is practicable, that their competence is maintained.

- Adequate and appropriate finances, facilities and equipment are available to enable first-aiders to render first aid to others and that the facilities and equipment are suitably maintained.
- Employees and students, and others who may need them, are informed of the arrangements made for the provision of first aid and the location of facilities, equipment and first-aiders.

**First Aiders must:**

- Hold a valid First Aid certification at all times and attend re-qualification and refresher courses at the appropriate time.
- Keep a copy of any first aid certificate in either electronic or paper form and be able to provide it on demand whilst at work.
- Respond to any call for first aid at any reasonable time and as far as they reasonably can within their designated area at work.
- Ensure a completed Accident/Incident/Ill Health Report form is submitted to Safety Services, this form includes the details of an event involving the administration of first aid. The form is available at:  
<http://documents.manchester.ac.uk/display.aspx?DocID=10017>  
This should include summary details of the treatment given. Alternatively, the injured person or their manager should be directed to complete one as appropriate. Forms should be sent to the University Safety Services at the earliest opportunity so that investigations can be undertaken as required.
- Keep additional records locally for reporting to their own Department, directorate, and safety committees, as required.
- Keep first aid kits fully stocked, and replenish after use, or delegate this task to nominated local staff.
- Maintain their knowledge and skills (e.g. through refresher training, updates from the University First Aid Administrator, or relevant IT & media resources).
- Inform the HoD of any changes to their certification, location or contact details and maintain accurate information on online directory.

**1.15. Duties and Responsibilities in relation to Fire Arrangements within the Department**

The HoD is appointed as the “responsible person” for fire arrangements within the Department. The HoD receives an annual briefing on fire safety, covering incidents of note at the University and elsewhere, statistics and trends, and any particular matters they need to address during the next year and must:

- Minimise the risk of fire breaking out as a result of their activities.

- Make staff, students and visitors aware of the action to take in the event of a fire breaking out or fire alarm activation, and refresh relevant training, information and instruction at appropriate intervals.
- Ensure that emergency procedures (including those for emergency evacuation of buildings because of fire, bomb, oxygen depletion or other threat to health or safety) have been agreed for the premises occupied by their staff and students.
- Keep records of such information, instruction and training.
- Provide information about activities relevant to fire risk and fighting fires to the University Fire Safety Officer, Safety Services and Fire Evacuation Marshals (FEMs), and assist the Fire & Rescue Service in dealing with any fire safety issues or incident.
- Inform the Faculty Estates Teams of any significant proposed changes in use of a building or room that might affect the fire risk assessment.
- Inform the University Fire Safety Officer of any changes to information contained in the building fire safety information boxes positioned near the fire alarm panels.
- That line managers understand their responsibility towards people who may have difficulties in emergency evacuation of a building.
- Appoint FEMs with responsibility for each part of a building they occupy, using the following criteria to assess how many should be appointed:
  1. At least 1 FEM per floor per fire exit stair protected to a final exit.
  2. FEMs should be able to sweep an area without adding more than 1-2 minutes to their own evacuation time.
  3. A higher number may be needed in areas where special fire risks have been identified and a fire risk assessment shows that this is necessary.
  4. Sufficient FEMs to monitor each exit from the building (unless minor exits can be secured from premature re-entry).
  5. Where reasonably practicable, cover for absences.
- Provide assistance and support in the investigation of any incidence of fire in accordance with these arrangements.
- Ensure that all students with disabilities are supported by a Department nominee through the process of defining their emergency escape arrangements, and the production of a PEEP where appropriate.

**1.15.1. Fire Evacuation Marshals (FEMs) duties include:**

- Assisting in the evacuation of people from a building in the event of fire alarm activation and at any time to report defects or problems with the fire safety arrangements to the local safety advisor, safety office or Estates and Facilities Helpdesk. The training is co-ordinated by the University Fire Training and Evacuation Co-ordinator.
- Being familiar in detail with the following fire safety aspects of the working areas they have been appointed for with:
  1. Means of escape and how they work (including where necessary, door security devices) and whether any escape route is temporarily taken out of use.
  2. Location of the fire alarm call points and how they work.

3. The alarm signals.
  4. Correct procedures to be followed when discovering a fire or hearing the alarm.
  5. Physical layout of the building.
  6. Special risks associated with the work area and the presence of any permanent or temporary features of the work that result in a higher risk of fire or explosion.
- They should advise the HoD about temporary cover arrangements in place when they are on leave or away from normal work station, or that new appointments or arrangements are necessary.
  - FEMs should initially undertake the L&OD (Learning and Organisational Development) training course [TLCF101eFire Evacuation](#), and have building familiarisation training with the School Safety Advisor. Team work within a building and between FEMs will be facilitated by the School Safety Advisor.
  - **During an alarm and evacuation:** FEMs are not expected to put themselves at risk. Their role is to ensure the evacuation proceeds smoothly and quickly, that all persons are responding to the alarm, and that the spread of fire (and especially smoke) is hampered by closed fire doors. FEMs will assist Security in coordinating short term evacuations. Specifically, FEMs must:
    1. Ensure all people are evacuating from the areas for which they are responsible including any computer clusters allocated to them.
    2. Urge people to leave their rooms / area but without unduly delaying others.
    3. Check locked doors, toilets, inner rooms and places where people work alone.
    4. Report any person at a refuge point to security staff and assist in their evacuation if necessary and if suitably trained.
    5. Keep people moving and clear corridors quickly, and encourage them to take the quickest and nearest route out of the building.
    6. Ensure exit routes do not become blocked by people congregating directly outside the final exit points.
    7. Once outside, all FEMs should encourage people to move away from the building towards the assembly point.
    8. Report any known casualties to the emergency services immediately.
    9. Comply with the specific arrangements agreed for their building, and in particular stand by the exit they have been assigned to and instruct people not to enter or re-enter until the all-clear is given by the Fire & Rescue Service or University Fire Safety Officer or Security. (Silencing of the fire alarm is NOT the signal to re-enter).

FEMs are **not** expected to:

- Carry out a rescue in a fire zone.
- Stay and tackle the fire.

#### **1.15.2. Duties of all Staff and Students in relation to Fire include to:**

- Co-operate with managers and supervisors and those with fire safety responsibilities, and comply with the implementation of the University Fire Safety arrangements.

- Ensure they know what to do in the event of fire, leave equipment in a safe condition, and be familiar with escape routes from their work location.
- Consider the risk of fire from their activities and reduce or control that risk.
- Not interfere with or abuse any equipment provided for fire safety.
- Check during the weekly alarm tests whether the fire alarm is audible in their areas of work and report any deficiencies.
- A member of staff or a student with a disability that hinders their emergency escape is responsible for notifying their manager or supervisor (staff) or their Department disability co-ordinator (student), of their disability, so that a personal emergency evacuation plan (PEEP) can be drafted for them.
- If disabled, be familiar with their PEEP and take responsibility for keeping it up-to-date.
- Respond promptly to all activations of the fire alarm (except the weekly tests at the designated time), and not wait to be moved on by an FEM or other person. This is particularly important for people working out of hours or alone.
- Staff with groups of students should stop teaching, instruct them all to leave, and follow them out, ensuring doors are closed as they exit the building.
- Ensure good housekeeping standards are maintained in areas they occupy and arrange for routine maintenance of any equipment or machinery they are responsible for.
- Properly dispose of their own combustible waste materials and report any accumulations that are not being removed or which obstruct fire exit doors or corridors (on [Estates & Facilities Helpdesk](#) or by ringing 52424, or to House Services staff).

***All staff should note paragraph 7 of the University's Fire Safety arrangements, which makes non-compliance a serious matter subject to disciplinary procedures.***

## **1.16. Duties and Responsibilities of Display Screen Equipment (DSE) Assessors**

The Head of Department is responsible for DSE provisions within the Department and must ensure that an adequate assessment of the health and safety risks to DSE users takes place.

### **DSE assessors must ensure:**

- That they undertake the appropriate training e.g. L&OD, course [TLCO100](#).
- New users undergo training and self-assessment as part of the induction process.
- Ensure existing users undergo training and self-assessment on an ongoing basis.
- Follow up self-assessments to resolve problems.
- Carry out face to face full DSE assessments where necessary.
- Make referrals to the University Occupational Health Department where appropriate.



## **1.17. Communication and Consultation**

The Department recognises that to maintain an effective health and safety management system all staff and students within the Department need to be consulted and receive adequate communication on health and safety.

Whilst consultation and communication on health and safety takes place informally on a daily basis in accordance with work activities, formal communication arrangements include the:

- Department Intranet
- Department H&S Notice Board
- Safety Inductions
- Safety Posters
- Safety Inspections
- Safety circulars via emails
- Safety Advisor report at the Department Forum Meetings
- Department HSW Committee

## **1.18. Liaison with other bodies within and external to the University**

The HoD will ensure:

- In consultation with the Director of Estates & Facilities, participation in the arrangements for building-related work by external contractors and in-house staff, to ensure that all such work is adequately supervised by competent people.
- Notification of the Director of Estates & Facilities of defects in the fabric and common services of buildings, and take every reasonable step to minimise risk arising from any defects until remedial work has been carried out, even if this means taking a particular facility out of use.
- In University of Manchester controlled buildings, the permission of the Director of Estates & Facilities is sought for any installation, construction, modification or alteration of building fabric or engineering service, so that safety checks for asbestos and other hazards can take place.

## **1.19. HSW Committee – Schuster and Alan Turing**

Health, Safety and Wellbeing Committee meetings occur four times a year, unless circumstances require more frequent meetings.

### **1.19.1. Terms of Reference**

#### **1.19.1.1. Purpose**

To consider all issues regarding general occupational health, safety, and associated training, relevant to the Department.

To ensure that:

- The University and Department's Health and Safety policies and the organisation and arrangements for its implementation are adhered to and managed effectively across the Department.
- Communication on Health and Safety matters within the Department is robust.
- Assurance is provided to the HoD, so they can in turn provide assurance to the Faculty and University Board that health and safety is being managed appropriately in the areas they are responsible for.

The Committee reports directly to the Department Executive Team and Department Forum to ensure that senior managers are aware of H&S issues that require attention.

#### **1.19.1.2. Role of the Committee**

The role of the Department's Health, Safety and Wellbeing Committee is:

- To develop, implement and monitor the health and safety policy across the Department for all staff, students and visitors.
- To set health and safety objectives for the coming year and monitor progress against these set objectives.
- Agree a risk-based inspection schedule for all areas within the Department, monitor progress against the inspection schedule and respond to issues of concern highlighted in the inspection reports.
- To ensure there are sufficient numbers of trained staff to undertake the required health and safety roles within the Department.
- Agree a training strategy for the Department, which will ensure all students and staff receive health and safety training appropriate to their role, and monitor its implementation. This will include training for supervisors and induction procedures.
- To monitor and review health and safety practice across the Department of Physics and Astronomy.
- To monitor compliance across the Department with statutory and University safety requirements.
- To monitor and review appropriate liaison with JBO and other institutes within the University.
- To monitor and review safety audits and inspections and the progress of implementation of any follow-up actions arising.
- To develop a communication strategy of health and safety related information to all Physics and Astronomy staff, students and visitors and monitor its effectiveness.
- To review, monitor trends and discuss actions required to reduce accidents from near-misses, incidents, ill-health and accidents reports that have occurred within the Department and request that findings are disseminated to all relevant personnel.
- To consider matters arising from previous safety committee meetings.
- To provide assistance in the development of safety rules, systems of work and procedures.

### 1.19.1.3. Role of the Committee Members

All Committee members should provide information, advice and support and promote awareness of Health, Safety and Wellbeing to the respective area they are representing.

The Head of Department will chair the Committee and also nominate one member to act on their behalf for occasions when the chair is absent.

#### Members will:

- Attend scheduled meetings of the committee (or provide an alternative where necessary).
- Positively contribute to provide assurance to the chair that their section is managing safety issues appropriately, providing information on any new risks that have been introduced.
- Undertake such consultations as appropriate and feedback to the Department Health and Safety Committee.
- Ensure agreed actions are implemented in a timely manner.
- Ensure relevant information from the HSW Committee is communicated effectively in their respective area.

### 1.19.1.4. Membership

The current members are as follows:

#### PS Staff

Deputy School Operations Manager	Razia Begum
Technical Operations Manager (I&F)	Hayley Markham
School Safety Advisor (Dept of Physics)	Nicola Hutchings
BSA (Faculty Advisors)	Sandra Taylor Rongjia Xu Delphine Darios
Senior Experimental Officer	Mark Sellers
Workshop Manager	Darren Shepherd
Secretary	Katie Shaw
JBO Site Safety Advisor	Mike Anderson
Wellbeing Champion (staff)	Andrew Markwick

#### Academic Staff

HoD	Christopher Parkes
JBO/JBCA	Rob Beswick

Physics of Fluid and Soft Matter	Sri ganesh Subramanian
Theory	Michael Birse
Condensed Matter	Artem Mishchenko
Particle Physics	Alexander Bitadze
Biophysics	Jian Lu
Nuclear & RPS	Paul Campbell
LSA	Darren Graham
Teaching	Neal Jackson
Non-ionising Advisor	Oznur Apsimon

#### Union Reps

Unite (JBO)	vacant
Unite (Main site)	vacant
Unison	Gary Booth
UCU	Jamie Gilmour

#### Postgraduate/ Student Reps

Postdoctoral reps	Thomas Elliott Qian Yang
Postgraduate rep	vacant

Undergraduate reps	Iliana Ruseva Cayetano Ruiz
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FSA	Sylvester Boon
USC	Joanne Read

**By invitation**

Others may be invited to attend specific meetings where a need suggests this is appropriate. Five members are required for the meeting to be quorate.

**1.19.1.5. Meetings:**

- Topics for the agenda will be collated by the School Safety Advisor (Department of Physics).
- The School Safety Advisor (Department of Physics), Technical Operation Manager (I&F), Jodrell Bank Safety Advisor, Biological Safety Advisor, Laser Safety Advisor and Radiation Protection Supervisor are required to submit a report to the Committee on Health and Safety matters arising within their respective areas. Other members should inform the Committee of any issues, concerns, good practice or new hazards within their respective areas.
- Meeting papers will be circulated to all members for the Committee by its secretary one week prior to the meeting.
- Meetings will be held quarterly.

**1.19.1.6. Review**

The Health, Safety and Wellbeing Committee will review its Term of Reference every year and be a standing item of the agenda at that agreed meeting.

**1.20. JBO Health and Safety Committee**

This is a standing committee that covers Health and Safety issues at the Jodrell Bank Observatory. The purpose is to:

- Share good practice in Health and Safety.
- Ensure all departments and groups are following safety procedures.
- Regularly review our Health and Safety procedures and ensure they are up to date.
- Ensure staff are appropriately trained for their roles.
- Review incidents/near misses since previous meeting.
- Identify and make changes or improvements following incidents (involving internal staff or contractors on site).
- Propose procedures/guidelines/method statements/etc. required for certain activities and review our existing procedures on a regular basis. Our remit also often extends beyond our own 'groups and departments' - we consider whether contractors have proposed safe methods of working, review their procedures and any incidents that arise in connection with external contractors working on our site(s) or having a potential impact on our staff.
- Continuously improve the site and equipment.

This group meets three times a year. Minutes are sent to the Head of Department and reported to the Department Committee. The current membership is:

Director of JBCA	Mike Garrett
Associate Director for JBO/Director of eMerlin and VLBI National Facility	Simon Garrington
Head of Engineering	Neil Roddis
Mechanical Engineer	John Kitching
Electrical and Control Engineer	Ray Comber
Head Telescope Engineer	Phil Clarke
University Safety Co-ordinator	Joanne Read
Site Manager and Safety Advisor	Michael Anderson
Unite Rep	vacant
Faculty Health and Safety Manager	Sylvester Boon

## **1.21. Monitoring and Review**

Continuous monitoring and review is essential to ensure that high standards are maintained within the Department. Monitoring can be formal (inspections and audits) or informal (day to day checks and observations).

### **1.21.1. Informal Checks**

Academic Supervisors and Managers are responsible for upholding health and safety standards in the respective areas they manage. They should carry out informal safety tours regularly to check on compliance in their areas and any shortcomings should be rectified to ensure high standards are upheld.

### **1.21.2. Inspections**

The Department will ensure that all laboratories and workshops are inspected annually. Offices' self-inspections should also take place annually. The area to be inspected will be given notice of two weeks of their inspection date. The report and recommendations should be sent within one month of the inspection date. Academic Supervisors and Managers should ensure remedial actions are implemented, any issues should be directed to the Safety Advisor. Follow-up inspections will occur approximately 6 weeks after the report being received.

At JBO the Site Safety Advisor is responsible for the scheduling and organisation of inspections and the presentation of inspection reports at the Department Safety Committee meetings.

Inspections may increase in areas where poor safety standards have been identified or after an accident or significant change has occurred. Additionally, Biological, Laser and Radiation inspections will be conducted in all Biophysics, Laser and Radiation laboratories annually by the BSA, LSA and RPS.

Finding from all inspections will be sent to the Department's HSW Committee meetings. Lack of action after follow-up inspections will be discussed and reviewed at the Committee and the Head of Department will ultimately decide what action should be taken.

### **1.21.3. Accident Data Trending**

Accidents will be investigated and accident data analysed to ensure that any noticeable trends can be acted on to prevent future failures from occurring again.

### **1.21.4. Safety Sampling**

Safety sampling is systematic sampling of particular dangerous activities, processes or areas. Sampling should take place at a random times and dates so that bias cannot take place. Academic Supervisors, Managers and Safety Advisors should regularly safety sample their areas to give an indication of compliance on a specific topic, such as number of users wearing the correct PPE, ensuring no food or drink is present in laboratories or workshops, ensuring all safety devices and guards are being used and are working correctly in the workshops.

### **1.21.5. Monitoring Report**

The School submits an OHSTAG (Occupational Health, Safety and Training Advisory Group) monitoring report to Safety Services annually, giving an opportunity to review the achievements and failings from the previous year and setting targets for the next year. This report is monitored and discussed at each Faculty HSW Committee meeting. Any actions relevant to the Department will be discussed at the Department HSW Committee meeting.

### **1.21.6. HASMAP Audits**

The University uses HASMAP (Health And Safety Management Profile) a standard set of criteria developed for the higher education sector, to assess health and safety performance.

This can be carried out in a number of ways

- Self-assessment by Faculties, Directorates, Schools, Institutes etc. using the Self-assessment tool (SAT)
- Safety Services undertaking bespoke audits

The recommendations from the report are discussed at each HSW Committee meeting. Actions should be implemented in a timely manner.

It is expected that any lessons learned from an audit are shared locally, with the expectation that managers assess their current practice and review their own health and safety performance.

## **2. General Arrangements**

### **2.1. Accident, Incident and ill-health Reporting**

All accidents, incidents, near-misses and dangerous occurrences **must be reported** and sufficiently investigated. This helps to implement changes to prevent recurrence, to help identify trends and areas that require further improvements.

The University and Department encourage reporting and individuals should not be intimidated, blamed or shamed for reporting or causing an accident, although in rare cases,

disciplinary actions may be necessary if deliberate non-compliance or attempts to cover-up are proven to have taken place.

In the event of an accident, incident or near-miss, immediate actions may be to provide first aid, make safe the area and preserve the scene. Following this, an investigation into the immediate and root causes should be carried out as soon as possible. The investigation should be conducted by the Academic Supervisors or Line Managers, with guidance and advice provided by the Safety Advisor.

All accidents, incidents or near misses on University premises or arising out of University business **must be notified to the School Safety Advisor (Department of Physics)** using this form:

<http://documents.manchester.ac.uk/display.aspx?DocID=10017>

Incidents at JBO should be reported to the Site Safety Advisor as well.

Accident investigation reports will be discussed at the Department's Health, Safety and Wellbeing Committee and at JBO's Safety Committee, if appropriate. Any agreed recommendations and learning to be shared throughout the Department. Agreed recommendations will have suitable completion timescales to be implemented by the manager, staff and students concerned. These will be tracked by the Department's Health and Safety Committee.

Guidance and Forms for accident investigation reports are available from Safety Services link below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/accidents/investigation/>

Any individual who believes that the substances, work practices or work environment are causing them to become ill should report this immediately to their line manager.

In this case further advice can be obtained by contacting the School Safety Advisor (Department of Physics).

## **2.2. Asbestos in Buildings**

Asbestos is a naturally occurring mineral fibre widely used as insulation, sound absorption and strengthening materials. Inhalation of the loose fibres can cause serious illness, including lung cancer, mesothelioma and asbestosis.

Use of asbestos in building materials was banned in the UK in 1999, but asbestos can still be found in buildings built before 2000.

Many of the University buildings contain asbestos, including ones used by the Department. Therefore, building users must **NEVER** carry out any activities that may damage, puncture or penetrate walls (both internal and external), ceilings, floor or pipework, without consulting Estates. If there is a need to do such activities, the Infrastructure and Facilities (I&F) Technical Operations Manager and Estates must be consulted in advance.

If building users discover any broken asbestos containing materials, they must report it to Estates and the School Safety Advisor (Department of Physics) immediately.

### 2.2.1. Jodrell Bank Observatory

The removal, or sealing and labelling of asbestos in the fabric of buildings at Jodrell Bank has been undertaken by the Directorate of Estates. Safely sealed asbestos is known to be present in the following areas, which must not be disturbed:

- Control building basement electrical distribution area and boiler room (cleaned and sealed 2011)
- MKII telescope Turntable laboratory
- MKII telescope Ward Leonard Room

Anyone who finds or suspects the presence of asbestos elsewhere must stop work immediately and notify the Site Safety Advisor. No cutting, drilling or other disturbance of asbestos is permitted.

### 2.2.2. Asbestos in Equipment

Some old equipment can still contain asbestos. If equipment is suspected or known to contain asbestos, work such as dismantling, servicing, replacement of parts or disposal **should not be attempted until** advice has been sought from the [Asbestos Team](#) and a risk assessment drawn up. It will be necessary to take steps to prevent exposure to dust.

If equipment is suspected or known to contain asbestos but there is no intention of exposing or disturbing fibres, appropriate labels should be provided to help prevent inadvertent exposures at a later date. All those likely to use the equipment should be informed of the location and condition of the asbestos containing material (ACM).

The School Safety Advisor (Department of Physics) or the Infrastructure and Facilities (I&F) Technical Operations Manager should be contacted in the first instance.

It is the responsibility of the Academic Supervisor and Line Manager to ensure equipment with asbestos is managed correctly.

The University's Guidance on Asbestos can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=23182>

## 2.3. Bicycles

Bicycles are not allowed in University buildings as they damage and dirty the floors and take up space. There are various bicycle parking facilities found on campus:

<http://www.estates.manchester.ac.uk/services/operationalservices/carparking/cyclershelters/>

Folding bicycles should be folded away before entering the building and are only allowed in offices if there is room to store them and they do not get in the way.



## 2.4. Bomb Threat

Take seriously any information you receive about a bomb. If the information is given in a telephone call:

- Let the caller finish the message without interruption.
- Write down the message exactly as spoken.
- Note the time.
- Ask the following questions, if possible:
  - Where is the bomb located?
  - What time is it due to explode
- Try to remember as much as possible about the caller's sex, age, accent, and state of mind.
- Notify Security on 0161 306 9966.

See also sections [terrorist attacks](#) and [letter bombs](#).

## 2.5. Building Access, Opening Times and Out of Hours

Schuster and Alan Turing are open 08:00 to 17:00 Monday to Friday. Out-of-hours operates weekdays from 5 pm till 8 am, weekends and Bank Holidays and University Christmas closure.

Undergraduate students are not permitted to work out-of-hours and must be supervised by an experienced and competent person at all times.

Those in the building out of hours should not allow "tailgating" (i.e. allowing others to follow them in after swiping) and will report any tailgating to Security immediately (if not comfortable to challenge). Lost or stolen cards must be reported to Security on 0161 306 9966, as soon as possible. Any evidence of irresponsible use, or abuse, of this privilege will result in their access being withdrawn.

### 2.5.1. Building Access Arrangements

Swipe card access is granted to staff, PhD, and visitors from Phys Ops upon completion of the P&A H&S induction.

Researchers collaborating with members of the Department may be granted access to the buildings if regular access is required to undertake their research, upon the completion of all relevant inductions and risk assessments.

All short-term visitors, such as contractors and engineers, should be permitted on site only if prior arrangements have been agreed. They must receive a local induction, [completed the contractor site induction form](#) and if possible, be escorted at all times. The University member of staff arranging the visit is responsible for their visitors.

All PhD students need to seek permission from their Academic Supervisor in order to work out-of-hours. Access will be granted via the Administration office once the relevant inductions have taken place. **It is the duty of Supervisors and Managers to ensure the person is**

**competent at the task, fully aware of the personal and building safety procedures and will comply with all regulations.** UG, MPhys and summer students should not be allowed to work in laboratories out-of-hours.

### **2.5.2. Out-of-Hours**

Building users must be aware that during these times, first aiders, evacuation marshals, experienced staff and central heating will not be available.

As help is limited, users must have the knowledge to deal with all foreseeable eventualities. Working during these times should be restricted, should be for exceptional circumstances, and must have a valid, suitable and sufficient risk assessment.

All activities must have a risk assessment that includes personal security, building security, emergency procedures, emergency contacts, buddy system etc.

Lone working is not permitted at any time. High risk activities are not permitted out-of-hours. Office work is permitted out-of-hours. However, this must be agreed with your line manager or Academic supervisor.

A buddy system can be accompanied or remote, depending on the activity, and should be specified on risk assessments.

All postgraduates must have their Academic Supervisor's authorisation and risk assessment approval beforehand.

Anyone intended to work out of hours or at weekend must read the "[Out of hours and weekend working guidance](#)" adapt the "[OOH working RA](#)" and if applicable also "[Lone working RA](#)" and send to School Safety Advisor for verification.

Any non-compliance may result in building access being removed.

## **2.6. Building and Personal Security**

All building users have a responsibility to ensure the building is safe and secure. They must not engage in any activities that may endanger themselves, other building users or damage the building.

Significant building emergencies must be reported to Security immediately on 0161 306 9966. These may include, but not exclusively, fire, flood, explosion, crime and terror threat.

During out-of-hours, building users **must never allow anyone without authorised access to follow them into the building**. They must never allow their own swipe card to be borrowed and used. Failure to comply with these arrangements may result in access privileges being suspended.

If building users encounter any suspicious activities on campus, they must get to a safe place immediately, and report to Security on 0161 306 9966.

Valuable items should be stored securely at all items.

Keypads on doors are undesirable as if they are not known to the Department or Security it can impede an emergency response. No one should install a keypad on a door without permission, they must liaise with the I&F team.

Existing keypad codes should not be changed without informing the Department, who will then inform Security.

## 2.7. Bullying, Harassment and Discrimination

The University has a zero tolerance policy to any form of bullying, harassment, and discrimination. This includes disablism, racism, homophobia, biphobia, transphobia and religious discrimination.

For further guidance see link below:

<https://www.reportandsupport.manchester.ac.uk/>

## 2.8. Children and Young Persons

The University identifies this group as anyone below the age of 18.

Children and young persons are strictly **not allowed** to be present in the laboratories and workshops at any time unless this is part of an arranged Department event.

Whenever children and young persons are participating in arranged events the relevant Risk Assessment must be signed off by the School Safety Advisor (Department of Physics).

With the exception of pre-arranged activities, children and young people **should not be brought into University buildings**. Many University buildings are not designed with children in mind. They contain potentially harmful physical hazards and other building users are not expecting to encounter children.

In exceptional circumstances, children and young people must be accompanied and appropriately supervised by a parent or guardian at all times. The parent or guardian should seek the authorisation of their Line Manager and carry out a risk assessment before hand, which should be signed off by the Head of Department. Staff should not request colleagues or students to supervise their children.

The Department is committed to safeguarding and promoting the welfare and safety of children. **Therefore, one-to-one contact with a child or young person should be avoided**. Anyone who may need one-to-one contact must complete a **Disclosure and Barring Service (DBS) check**.

UCAS interviews should take place in open environments. Where this is not possible, at a minimum, interviews should take place with the door open and the child positioned by the door.

**The Department's Child Protection Officer is Emma Nichols**, in her absence the SSA will take on this role.

Staff whose work may bring them into contact with young people under 18 in the course of their official duties should attend the Learning and Organisational Development course: [TMS60 Child Protection Policy & Guidance](#).

Offering a **work experience or work shadowing placement to a person under 18** requires a consent form from their parent and school/college, a visitor's form, and a risk assessment (which will inform whether a DBS is needed).

The participant should receive a timetable in advance of the placement and an induction on their first day including a H&S briefing. A named supervisor will need to be responsible for them at all times while they're on campus and hold emergency contact details for them.

Schools and colleges often require additional paperwork, including copies of the risk assessment and the University's public liability certificate. The Department's Child Protection Officer can provide blank copies of the necessary forms.

More information on the University's Child Protection Policy and Guidance can be found below:

<https://documents.manchester.ac.uk/DocuInfo.aspx?DocID=4287>

## **2.9. Contractors**

The University has a duty to ensure the safety of contractors and other visitors when on University premises. Contractors must be advised of any special hazards/situations present in the Department about which they would not ordinarily be aware.

All contractors should be given the [contractors' site induction](#) form found on Physics H&S Intranet page. An additional signed copy should be kept and given to the School Safety Advisor. Contractors should not start until they have completed the form.

Similarly, contractors have a duty to look after the health and safety of University staff, students and visitors.

The I&F Technical Operations Manager and Building Manager have been appointed to liaise between contractors and the Department. Members of the Department must advise them of any problems that occur in their area so that good communications between the Department and contractors can be assured.

### **2.9.1. Contractors and visitors at Jodrell Bank Observatory**

The Directorate of Estates has a Code of Practice which is issued to contractors. It outlines their actions generally whilst on University property.

The Site Manager/Safety Advisor has been appointed by the Managing Director to act as a liaison between outside contractors and JBO. The Telescope Supervisor will act as deputy.

The Director of the JBCE will liaise with contractors working at the JBCE or in the gardens. The Assistant Director will act as deputy.

Under the Health and Safety at Work Act, the University and this Department have a duty to advise contractors (and visitors) of any special hazards / situations present in the department about which they would not ordinarily be aware. Close liaison between individuals responsible for particular areas and the Telescope Engineer or the Manager of the JBCE as appropriate, or the relevant deputy, is thus essential.

It is the duty of members of the Department to be responsible for their outside visitors and to ensure their safe entry and exit from the Department and safe presence whilst within the Department's sphere of activities.

## 2.10. Cooperation with other organisations

The Department shares facilities with other departments on the Manchester campus, and organisations in other parts of the country. These include, but are not exclusive to:

- National Graphene Institute (NGI)
- Photon Science Institute (PSI)
- Jodrell Bank

The Head of Department still retains Health and Safety management responsibilities for any personnel working outside the Department. However, their day-to-day management can be delegated to the personnel who oversee those sites.

The Department should ensure that relevant measures are in place for their staff and students to work safely at their site of work. These should include:

- Adequate induction, training and supervision until staff and students are fully competent.
- Suitable and sufficient risk assessments in place **before work commences**. Documents should be completed according to the site of work, but copies should also be provided to the Department.
- Equipment at the site of work must be procured and maintained according to legislations and HSE guidance.
- Accidents and incidents must be reported to the responsible person at the site of work. Any significant reports and recommendations must be shared with the Department.
- Monitoring of performance (e.g. inspection and audit) must be carried out by the site of work. Reports and recommendations should be shared with the Department.

Guidance on arrangements for situations where staff and students work in areas beyond those normally occupied and controlled by their line manager can be found via the following link:

<http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=13897>

## 2.11. COVID-19

The 2020-2021 COVID-19 pandemic caused access to the Department buildings and facilities to close for several months, before reopening following strict guidance from the government, University, and the Faculty.

Due to the ongoing changes relating to Covid-19, please refer to the [National Health Service, Public Health England](#) and the [University coronavirus website for the](#) latest advice.

### **2.11.1. Working from Home**

Generally working from home is at the discretion of your line manager or supervisor. Hybrid working is a form of flexible working where colleagues spend some of their working hours or days at their contractual place of work and some of their time remotely, usually at their home.

A DSE assessment should take place for home working to ensure that you have a DSE set up which is as comfortable as possible. DSE advice can still be sought from the DSE assessor and items may be borrowed from the office or bought in to allow you to work in as comfortable an environment as possible. It is important to check in with your colleagues and to take frequent breaks. If you feel that you are struggling to cope with home working please talk to your line manager or supervisor.

Under these circumstances staff/students may begin to feel isolated and alone so managers/supervisors are requested to check in with their team on a regular basis. If managers/supervisors are concerned that a member of staff/student is suffering from mental health issues or a downturn in their wellbeing, there are resources to help – see sections on “Stress and Anxiety” and “Wellbeing”.

Please also note that any work related accidents/incidents/ill-health, near misses must still be reported to the Safety Advisor or your line manager.

Working from home RA: [https://www.staffnet.manchester.ac.uk/media/eps/chemistry-intranet/physics/Working-from-home-generic-risk-assessment\\_v1.2.docx](https://www.staffnet.manchester.ac.uk/media/eps/chemistry-intranet/physics/Working-from-home-generic-risk-assessment_v1.2.docx)

Temporary working from home video: <https://www.youtube.com/watch?v=Af7q5j14muc>

## **2.12. Disability Advisory and Support Service (DASS)**

DASS supports a variety of different Department users, whether students, staff or supporters.

DASS support plans for students are received by the Student Support Officer. The Student Support Officer should put in place the requirements of the DASS support plan, along with a specific risk assessment for the student, which should be agreed and signed off by the student. They should meet regularly to ensure their needs are being met. The Student Support Officer can seek advice from the School Safety Advisor (Department of Physics) to ensure any safety aspects are met. If the support plan requires a Personal Emergency Evacuation Plan (PEEP), the Student Support Officer should contact the School Safety Advisor (Department of Physics), who will ensure a PEEP is put in place for the student.

DASS support plans for staff are received by their line manager. The line manager should put in place the requirements of the DASS support plan, along with a specific risk assessment for the

staff member, which should be agreed and signed off by the staff member. The line manager can seek advice from the School Safety Advisor (Department of Physics) to ensure any safety aspects are met. If the support plan requires a Personal Emergency Evacuation Plan (PEEP), the line manager should contact the School Safety Advisor (Department of Physics), who will ensure a PEEP is put in place for the staff member. Learning and Organisational Development run a course: [TDY11 Supporting Staff with Disabilities](#) to aid managers support staff members with disabilities.

Learning and Organisational Development also run: [TMS21 Supporting Staff with Mental Health Problems](#) to aid managers support staff with mental health problems.

Further Guidance can be found at the link below:

<http://www.dass.manchester.ac.uk/>

## 2.13. Fire and Emergency Evacuation

Specific arrangements for the JBO site can be found in section 6.

The University of Manchester, and therefore the Department, will comply with the requirements of all current fire safety legislation and standards including the Regulatory Reform (Fire Safety) Order.

The University's guidance on Fire Safety can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/fire/>

### 2.13.1. Alarm

Both Schuster and Alan Turing have a single phase continuous alarm.

Upon hearing the alarm, everyone **MUST** evacuate the building immediately.

- Close windows and doors behind you
- Do not stop to collect personal belongings
- Do not use the lifts
- Make your way out of the building to the Fire Assembly Point
- Do not re-enter the building until told it is safe to do so.

There are a number of Fire Marshals who will wear hi-vis vests during an evacuation, please follow any instructions given by these persons.

**Fire Assembly point Schuster:** Brunswick Park Avenue between Roscoe and Zochonis Building

**Fire Assembly point Alan Turing:** Paved area opposite George Kenyon Building.

**Tests:** Fire alarm testing takes place weekly in each building. If the alarm sounds outside of the designated time or if it sounds for more than 15 seconds, please evacuate.

<b>Fire Alarm Testing Times</b>
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Schuster Building	Wednesday 09:15
Alan Turing	Monday 08:00
Jodrell Bank Control Building	Monday 12:00

Do not put yourself at risk in an emergency situation.




Please familiarise yourself with the location of the emergency exits from the building. These are clearly signposted and also indicated on maps which are posted in all the lift lobbies throughout the building.

**Raising the alarm:** If you discover a fire and the fire alarm has not activated you can raise the alarm by pressing one of the red break alarms located throughout the building.



### 2.13.2. PEEP

If you have a personal health issue which might affect your ability to leave the building promptly in an emergency situation then you should contact the School Safety Advisor (Department of Physics) so that a suitable personal emergency evacuation plan (PEEP) can be discussed and drawn up.

If you are unable to evacuate the building, each stairway landing has a designated refuge area, which will offer 30 minutes' protection. In the refuge there will either be an intercom which can be pressed or ring security on 0161 306 9966 and let them know of your location.

Equipment & Signage	Explanation
	Break glass point to activate fire alarm
	Designated fire exits or directions to the nearest fire exit
	Designated fire assembly point: Where you must go to and wait during and evacuation



	<p>Fire Action Notice: Provide fire safety information Unique to each building</p>
	<p>Refuge Point:  This area offers 30 minutes protection from fire  Either press the intercom and wait for instructions (if present) or ring security on 0161 306 9966 to let them know your location.</p>

### 2.13.3. Fire extinguishers

Foam and CO<sub>2</sub> fire extinguishers are located in all corridors. Specialist fire extinguishers must be requested from the SSA. Do not use fire extinguishers to prop open doors, they may get misplaced or broken. Only attempt to tackle a fire, if safe to do so.

Fire extinguishers can only be used by those trained and competent to do so and must only be applied on small fires. If unsure, activate fire alarm and evacuate.

All staff and students carry responsibility for their own safety and are expected to behave in a responsible manner to minimise the risk of fire. Combustible materials must not be allowed to accumulate in offices, labs, workshops or cleanrooms.

### 2.13.4. Corridors

**Corridors must be kept empty at all times.** Do not keep goods or materials on stairs or corridors as these are escape routes and their effective width must not be reduced.

Fire stop or internal fire doors are provided to contain any fire and must not be wedged open by inappropriate means. External fire doors must be kept clear and available for use.

Do not keep ignition or flammables materials in the metal cabinets stored in the corridors.

Smoking is prohibited in any University building.

Where possible, electrical equipment must be turned off when not in use.

Very occasionally the fire alarm system will be used for other emergencies (security alert, gas leak, etc.). In such situations, the occupants should respond in exactly the same way as for a fire evacuation.

### 2.13.5. Fire Curtains

**The Schuster goods lift:** When the fire alarm is activated, the goods lift fire curtains automatically descend on each floor and prevent the egress from the lift into the Schuster

Building. If you are in the goods lift at this time, the goods lift will descend to street level and the doors can be opened from the opposite side of the lift onto the paved area outside, at the side of Schuster. Exit the lift and make your way to the assembly area.

**Annexe Fire Curtain:** The Annexe has a fire curtain which separates the main building from the Annexe to prevent the spread of fire. The fire curtain will descend in the event of a fire alarm. Do not attempt to walk underneath the fire curtain whilst it is descending. Make your way out via your nearest exit.

## 2.14. First Aid

The University's guidance on First Aid can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/firstaid/>

In case of injury or sudden illness at work:

- Call your nearest first aider.
- For an ambulance - telephone 999 and notify Security 0161 306 9966.
- If First Aid is required outside of normal hours call Security on 0161 306 9966. All security personnel are qualified first aiders.
- An Automatic Electronic Defibrillator (AED) is kept in the foyer of both Schuster and Alan Turing buildings.

A list of the locations and telephone numbers of current First Aiders is displayed on green and white notices throughout the buildings and in every laboratory.

**Schuster:** First Aid boxes and eye washes are located at reception of Schuster, and many other clearly marked locations throughout the building. Users should familiarise themselves with their nearest first aid box.

There is a welfare room located in the main basement stairwell lobby, which contains first aid provisions, a fridge and is also a quiet room to rest whilst feeling unwell or receiving treatment.

**Alan Turing:** First Aid boxes and eye washes are located in the 3<sup>rd</sup> and 4<sup>th</sup> floor kitchens.

**Jodrell Bank Observatory:** See site specific information in [Section 6.5](#).

All First aiders are trained to an accredited standard.

First Aid kit provision and stock maintenance is co-ordinated by the School Safety Advisor (Department of Physics). If first aid supplies have been used, the Safety Advisor must be notified in order to replenish the stock.

### 2.14.1. Diphoterine

Some laboratories contain Diphoterine, which is used for the treatment of chemical burns.

In case of chemical contamination treat the affected area with Diphoterine at once. Do not use water beforehand as this will make the treatment less effective. Diphoterine is most effective if treated within the first minute of the chemical contamination.

Diphoterine is kept in clearly marked containers in all areas where there is a foreseeable risk of chemical contamination. Ensure the Diphoterine out and close to you when working with large volumes or a very hazardous chemical.

Diphoterine is not suitable for the treatment of hydrofluoric acid (HF) burns.

If Diphoterine has been used, the Safety Advisor must be notified in order to replenish the stock.

## 2.15. General Domestic Information

Domestic facilities are similar in both Alan Turing and Schuster buildings.

Alan Turing has a café in the foyer.

Schuster and Alan Turing have domestic facilities situated throughout the building, mainly in the form of kitchens. The water is safe to drink from any kitchen tap.

Lavatories are situated throughout the buildings at locations indicated on the building maps. In the Schuster building, they can be found next to the lifts on each floor. If you find these to an unacceptable standard, inform House Services (notices are displayed in all toilets).

The water in the lavatories and laboratories should not be used as drinking water.

**Ventilation** - Most large spaces are mechanically ventilated. If a room feels stuffy and stale, then ventilation may not be working, please report and other faults through [Estates Helpdesk](#).

In rooms where there is no mechanical ventilation consider opening windows and doors to assist.

## 2.16. Housekeeping

Good standards of housekeeping should be maintained at all times in all areas of the Department to prevent accidents and reduce the risk of fire. It is the responsibility of the person in charge of the area to ensure that standards are maintained.

Do not overload shelves or store heavy/large items at height. Remove potential trip hazards (boxes, books etc.) from walkways. **Samples and chemical reagents must not be stored in offices.**

**Kitchens, offices and labs** – it is up to the users of these areas to clean these themselves. Please leave the area as you wish to find it. In Kitchens do not leave dirty items by or in the sink. Offices and labs please clean up after use, use the bins provided and place chairs back under tables/benches to avoid trip hazards.

All staff and students within the Department are expected to keep waste to a minimum and remove items that are no longer of use.

Schuster back door can be used to dispose of unwanted items.

Alan Turing has a waste yard in-between the George Kenyon and Roscoe building. There are also general and recycle waste bins located in all corridors in both buildings.

If you have large items that require removing, please liaise with House Services (notices in all toilets) but can also be requested at reception.

Leads and cables must not constitute a trip hazard. Tables/desks often had cable trays or other design features which can assist with managing cables. Placing the cables around the back of desk/tables instead of the front is better practice and decreases the risk from slips and trips.

[Office self-inspections](#) should be occurring yearly and identified actions rectified by office users. Please report faults via the [Estates helpdesk](#) or by calling 0161 275 2424. If you have issues with your furniture please contact Phys Ops.

There is an example risk assessment on the Physics intranet on [working in general workspaces and offices](#), including working out of hours that can be used as a starting point for your own office risk assessments.

Schuster's building manager is Alan Wardle and the I&F team can also assist both Schuster and Alan Turing with [Infrastructure & Facilities enquiries](#).

## **2.17. Inductions**

All new building users must receive a local induction to Schuster and Alan Turing Buildings, regardless of whether they have attended inductions in other Departments and Institutes. It is the responsibility of the line manager or academic supervisor to ensure this occurs.

### **2.17.1. Staff Induction**

All staff both new to the University and transferees, including visitors, must undertake an induction process within a reasonable timescale, typically within 1 month of taking up the post. Depending on their specific duties this will include:

- a) **Central University induction for all new staff** - this is given via the short mandatory eLearning course, THS1E delivered online via the link below:  
<https://app.manchester.ac.uk/training/profile.aspx?unitid=4721&parentId=4>  
A University login and password is required.
- b) **General and Laboratory Department Induction Staff and Visitors** must complete a Department induction with the School Safety Advisor (Department of Physics).

Inductions are run monthly and dates can be found on the Department intranet via the following link:

<http://staffnet.cmsstage.manchester.ac.uk/physics-and-astronomy/health-and-safety/safety-inductions/#d.en.599926>

The new member of staff or their line manager must contact the School Safety Advisor (Department of Physics) or to arrange induction. It is advised that this takes place prior to the completion of the checklist in part (b) as relevant information is given at Department induction.

If the visitor is short term i.e. less than a month please contact the School Safety Advisor (Department of Physics) for advice.

- c) **University Health and Safety Induction Checklist** - This University level document forms the basis for staff health and safety induction and is to be completed by line managers with the staff member. Completed checklists should be signed off by the SSA detailed. Forms can be found via the link below:

<http://documents.manchester.ac.uk/display.aspx?DocID=13619>

- d) **Specific Local Induction for High risk areas** such as laboratories, workshops and clean rooms. The 'Responsible Person' for these areas must ensure that each staff member has received a specific induction for the space concerned. These should be undertaken on site and include any specific hazards, procedures and practices that the responsible person wishes to impose but also include (but not limited to) items such as:

- General laboratory rules
- Need for, use, storage and maintenance of PPE
- Fire evacuation
- Nearest escape routes/fire exit
- Location of nearest first aid kits/eye wash facilities
- Location and use of spill kits
- Any general equipment training such as local exhaust ventilation and fume cupboards or frequently used laboratory equipment
- Details of and/or introduction to named senior persons within the lab, PDRA, laboratory technician or senior postgraduate students who will be able to give advice/supervise activities in the responsible person's absence
- The need for risk assessments and chemical risk assessments and the process to follow to obtain them.
- Reporting of accidents, incidents, ill-health and near misses specific to some areas.

- e) **Jodrell Bank Observatory** for staff or students who visit or work at the Observatory which includes:

- Site specific hazards at JBO
- Emergency arrangements for the building

- Recognising signage
- Waste disposal
- Site security

The Responsible Person may delegate the execution of the Specific Local Induction but not the responsibility for ensuring it is sufficiently carried out and recorded.

**Office based staff** should also have any relevant Health and Safety information provided by the line manager such as:

- General office rules
- Fire evacuation
- Nearest escape routes/fire exits
- Location of nearest first aid kits
- Reporting of accidents, incidents and near misses.

The University's guidance on Induction can be found below:  
<http://www.healthandsafety.manchester.ac.uk/toolkits/induction/>

All staff who regularly use Display Screen Equipment (DSE) typically more than 1 hour a day must also complete a DSE assessment. See section on [DSE](#) for further details.

## **2.17.2. Student Inductions**

### **2.17.2.1. Undergraduate Students and Postgraduate Taught Students**

All undergraduate students must complete the Central University Induction for Undergraduate (UG) and Postgraduate taught (PGT) students. The central University health and safety induction modules for UG and PGT students are delivered online through Blackboard and are monitored by the administration office.

There are in five parts:

1. University Expectations
2. Your Safety
3. Practical Work (including fieldwork)
4. Placements
5. Department local arrangements.

**Modules 1, 2, 3 and 5 are mandatory for all UG & PGT students.**

Module 4 is optional and taken by UG & PGT students whose course includes a placement.

Completion rates are reported to the Board via the University Health, Safety and Wellbeing Committee. There is a University Key Performance Indicator (KPI) of 100% completion.

More information can be found via the following link:

<http://www.healthandsafety.manchester.ac.uk/toolkits/induction/student-ind/ug-pgt/>

### **2.17.2.2. Postgraduate Research (PGR) Students**

The central University health and safety induction modules for PGR students are delivered online through Blackboard and monitored via the administration office.

The first, PGR-IND001, is **mandatory for all students** and is in three parts:

1. University expectations
2. Your safety
3. Principles of risk assessment

Enrolment onto the other modules is dependent on the student's project and on standard Department pathways.

These modules are:

PGR-IND002 Working in labs and workshops

PGR-IND003 Chemical risk assessment

PGR-IND004 Biosafety

PGR-IND005 Off-campus work (including fieldwork)

In most cases, students will be enrolled onto courses by their Department when progression pathways are set up. Students may also enrol individually by applying through the Training Catalogue. When enrolment is confirmed, an email containing information about the course (including how to access the material) is sent to the student. The pass mark for each module is 70% overall. Departments are expected to have a 100% completion rate.

**All postgraduate research students are also required to attend a general and if applicable laboratory Department induction with the School Safety Advisor (Department of Physics).** In September and January these inductions are prearranged in the welcome week. However, if a student arrives at a different time of year this will need to be arranged separately with the School Safety Advisor (Department of Physics).

**Card access will not be granted until attendance at the Department Induction has been confirmed.**

More information can be found via the following link:

<http://www.healthandsafety.manchester.ac.uk/toolkits/induction/student-ind/pgr/>

### **2.17.2.3. MPhys Final Year Project Students and Summer Students**

Any final year MPhys student or summer students who will be partaking in a laboratory project must attend a health and safety induction with the School Safety Advisor (Department of Physics) before the project starts. It is the responsibility of academic supervisor to ensure the student attends. The academic supervisor is responsible for the MPhys student or summer student for the entirety of the project and must ensure that:

- They are supervised and suitably trained to ensure they work safely.
- A risk assessment is in place before the project starts, including CRA forms and signed off by the academic supervisor.

- They are provided with the correct control measures and PPE for carrying out their tasks and ensure they follow and wear these correctly.
- Lone working is strictly prohibited.
- No out-of-hours working is allowed.

**Note: MPhys students and summer students are NOT allowed to move gas cylinders. Only those who have gone on the University course are permitted to do this.**

## **2.18. Intranet**

The Department H&S intranet can be found at the following link:

<http://staffnet.cmsstage.manchester.ac.uk/physics-and-astronomy/health-and-safety/>

The Department's H&S intranet contains the Department's policy, induction information, various forms, example risk assessments and CRA forms, recommended training, safe systems of work, emergency procedures, posters, videos and other useful H&S information.

## **2.19. Lecture Theatres**

Lecture theatres are not managed by the Department. These come under the supervision of the Central Timetabling Unit (CTU) who can be contacted on 0161 275 7305. Any defects should be reported directly to Estates helpdesk on 0161 275 2424.

All theatres must be vacated ten minutes to the hour to enable students to arrive at their next venue and to allow the next lecturer to prepare for the next scheduled class.

If you decide to cancel your CTU room booking, then you must confirm this with the CTU.

**Please Note:** Lecture theatres and class-room doors must not be locked during classes/seminars unless the lecturer/supervisor first instructs the class in how to use the door locks and demonstrates the Building Evacuation Procedure. Lecture Theatre Evacuation Plans are sited within the room and these must be conveyed to the occupants by the lecturer on their first use of the room.

## **2.20. Letter Bombs**

If a suspicious letter or small package is received:

- Handle it with care and place it in a locked unoccupied room or locked drawer.
- Do not attempt to open, and do not immerse in water.
- Keep people away.
- Notify Security on 0161 306 9966 on campus or the Site Safety Advisor at JBO.



## 2.21. Liaison with Estates and Building Faults

The buildings occupied by the Department are owned and rented from Estates. Therefore, any change to infrastructure is prohibited without authorisation from Estates, this includes nailing a picture to a wall as the wall may contain asbestos (see [Asbestos in Buildings](#) section).

The Directorate of Estates and Facilities manages University estate and provides services in building maintenance, ground maintenance, campus security, cleaning, waste disposal, car and cycle parking.

All building users have the responsibility to ensure the building and surrounding areas are in good condition and free from defects.

Any building-related issues should be reported to either the Building Manager or I&F Technical Operations Manager.

Defects can be reported to the helpdesk directly on 0161 275 2424 or online at the following link:

<http://estatesandfacilities.ds.man.ac.uk/BusinessUnits/Helpdesk/NewRequest.asp>

The Building Manager or I&F Technical Operations Manager should be informed of the self-reported defect.

All work that may require new building services or affect existing building services (e.g. electrical supply, exhaust ventilation etc.) must be notified to the I&F Technical Operations Manager in the first instance.

## 2.22. Lifts

### 2.22.1. Passenger Lifts

The passenger lifts in Schuster are for the transport of people and non-hazardous materials. Any defects should be reported to the I&F Technical Operations Manager or the Building Manager.

Empty gas cylinders, chemical bottles and cryogenic vessels are NOT allowed to be transported via the passenger lift.

Alan Turing passenger lift can be used to transport hazardous material to the 4<sup>th</sup> floor but only under the following circumstances:

- The passenger lift is locked out, ensuring no one can enter the lift at a different floor when hazardous materials are being transported.
- All hazardous materials are transported to the 4<sup>th</sup> floor unaccompanied.
- A barrier with a warning sign is placed within the lift to stop anyone from entering.

**Note: Please do not use the passenger lift to transport hazardous material during the weekly fire alarm test in Alan Turing on Monday at 8:00 am.** The lift controls are overridden in the

event of a fire alarm and the lift will descend to street level. However, on deactivation of the fire alarm anyone can then enter the passenger lift. Therefore, the barrier and signage are important to ensure no one enters the lift at this time.

### **2.22.2. Goods Lift**

The goods lift in Schuster should be used to transport all hazardous materials such as gas cylinders, chemicals, cryogenic liquids, dry ice, radiation sources etc. **These must be transported UNACCOMPANIED.**

The goods lift must be locked out during this time to prevent entry by any other user. A key for locking out the lift is available in Stores. A signage stand or barrier must be placed inside the lift to warn others not to enter the lift during transit of hazardous materials.

If the goods lift is out-of-order, please contact the School Safety Advisor (Department of Physics), I&F Technical Operations Manager, Building Manager or Stores Manger who will arrange to transport the hazardous material via the passenger lifts. There is a Standard Operating Procedure in place.

Building users are **not** permitted to start using the passenger lift for transport of hazardous materials when the goods lift is broken.

**Note: Please do not use the goods lift to transport hazardous material during the weekly fire alarm test in Schuster on Wednesday at 9:15 am.** The lift controls are overridden in the event of a fire alarm and the lift will descend to street level. However, on deactivation of the fire alarm any can then enter the goods lift. Therefore, the signage stand or barrier is important to ensure no one enters the lift at this time.

## **2.23. Lone Working**

Specific arrangements for the JBO site can be found in section 6

Lone working should be avoided whenever possible.

The University's definition of lone working is:

- Working without close contact with others or without direct supervision
- Working beyond earshot of another, unable to summon assistance
- Can be during the normal working day or out-of-hours.

General office activities by lone workers, such as paper work and computing and low risk activities are permitted within the Department, provided the lone workers' presence is known by a colleague and approved by supervisor/line manager.

Laboratories / workshops must have considered lone working as part of the risk assessments, detailing the recommended lone working procedures and listing those activities that are and are not permitted by lone workers. Lone working can occur within working hours also, so this needs to be considered for all scenarios.

The risk assessment must clearly specify control measures to ensure the lone worker's safety. This may include notifying colleagues of the location of work, duration of work, and designated buddy system. A buddy system can be accompanied or remote, depending on the activity, and should be specified on risk assessments.

Thorough consideration should be given to activities involving:

- Hazardous substances
- Hazardous machinery
- Biological materials
- Compressed gases
- Oxygen depletion areas
- High voltage
- Procedures with a risk of fire or explosion
- Lifting equipment
- Working at height e.g. ladders
- Confined spaces
- Clean rooms, where access to help may be restricted.

**Any lone working out of normal working hours is strictly limited within laboratories, clean rooms and workshops to low risk activities. See [out of hours and weekend working guidance](#).**

Disciplinary sanctions may be taken against persons breaking this rule.

Training on lone working can be found via the following online course, [TLCO230 Lone Working Out of the Workplace](#).

JBO has specific arrangements in relation to lone working at the Observatory and Outstations which can be found in [Section 6.6](#).

The University's guidance on Lone Working can be found below:

[http://www.healthandsafety.manchester.ac.uk/toolkits/lone\\_working/](http://www.healthandsafety.manchester.ac.uk/toolkits/lone_working/)

## **2.24. New and Expectant Mothers**

This group refers to anyone who is pregnant, has given birth within the last 6 months or is currently breast-feeding.

“Given birth” is legally defined as having delivered a living child or, following 24 weeks of pregnancy, delivered a stillborn child.

**Only once informed in writing that a person is pregnant** does the Department have a duty of care to assess the risks to the pregnant mother.

Once informed, Academic Supervisor or Line Managers have the responsibility to ensure that a formal Maternity Risk Assessment is carried out by the School Safety Advisor (Department of Physics).

A Maternity Risk Assessment should consider the mother's general comfort and wellbeing, plus any additional risks presented to the child from the activities undertaken. **It should be reviewed throughout the pregnancy and following the return to work.**

If the Maternity Risk Assessment identifies the need to change working conditions, but it is not possible to do so, then alternative work or paid leave should be considered.

Occupational Health can provide further advice and support to new or expectant mothers.

The University's guidance on "New and Expectant Mothers at Work" can be found below:  
<http://documents.manchester.ac.uk/display.aspx?DocID=11521>

## 2.25. Occupational Health and Health Surveillance

The University recognises the importance of health, safety and wellbeing of all staff and students. Occupational Health provides confidential support, advice and training on work-related health issues. These may be issues arising from work activities, or health conditions which may be exacerbated by work activities.

Location of Occupational Health:

4th floor, Crawford House, Booth Street East, Manchester, M13 9QS

The following activities require fitness assessment or [health surveillance](#):

- Use of CMRs (carcinogens, mutagens and reproductive toxins)
- Use of skin or respiratory sensitisers
- Use of biological materials
- Use of nanomaterials
- Use of equipment involving lasers, ionising radiation, noise, vibrations, dust

Staff can self-refer to Occupational Health. Academic supervisors and Line Managers have a duty to refer their staff or students to Occupational Health if they have any concerns.

<http://www.occhealth.manchester.ac.uk>

Anyone with a health issue that may affect or be exacerbated by their work should register with the University Disability Advisory and Support Service (DASS).

<http://www.dso.manchester.ac.uk>

## 2.26. Open Days/Conferences and Other Events

The Operations team/your research group administrator (contactable at [phys-ops@manchester.ac.uk](mailto:phys-ops@manchester.ac.uk)) can book Departmental rooms for you.

Organisers will need to complete a Risk assessment form for the event. See Physics H&S Intranet page of an example open day form.

<http://staffnet.cmsstage.manchester.ac.uk/physics-and-astronomy/health-and-safety/risk-assessment-library/>

A copy of the completed risk assessment should be kept with the School Safety Advisor (Department of Physics).

## **2.27. Procedure for non-compliance**

The University and Department take acts of non-compliance seriously and **support all personnel to challenge poor practices**, raise the issue of non-compliance and report it to a responsible member of staff, in order to maintain good standards.

Non-compliance includes the misuse or lack of personal protective equipment (PPE). Reporting can be made to an Academic Supervisor, Line Manager, School Safety Advisor (Department of Physics) or Head of Department.

Please note in rare cases, step 1 and 2 may be omitted and step 3 is actioned immediately.

### **Step 1 – Informal warning**

The individual is verbally informed of the non-compliance by a member of staff, Academic Supervisor or Safety Advisor. They are reminded of the correct procedure and the consequences of further bad practice.

The Academic Supervisor is notified so they can provide further guidance.

School Safety Advisor (Department of Physics) is notified to record the incident and to provide further guidance.

### **Step 2 – Formal warning**

(Repeated non-compliance)

This will result in a meeting with the School Safety Advisor (Department of Physics) and Academic Supervisor. The individual will be suspended from laboratory access until they have refreshed their H&S training and have demonstrated safe working practices. Out-of-hours access will also be suspended. Length of suspension will be determined at the formal meeting.

### **Step 3 – Formal non-compliance notice**

(Repeated non-compliance following Step 2, or a single serious breach of Health and Safety)

The individual will be issued with a formal non-compliance notice by the Head of Department. A meeting with the Head of Department, School Safety Advisor (Department of Physics) and Academic Supervisor will take place.

The individual will be suspended from laboratory access, until they have refreshed their H&S training and have demonstrated safe working practices. Out-of-hours access will also be suspended. Length of suspension will be determined at the formal meeting.

## 2.28. Risk Assessments

Risk assessment is a key requirement of the Management of Health & Safety at Work Regulations (1999) in order to ensure safe working practices and high health and safety standards. Risk assessment is the process through which the decision of how to control the risk from any given hazard is made, and a conclusion reached about the balance between weighing the risk of injury / damage against the cost or sacrifice needed to control or reduce that risk.

A suitable and sufficient risk assessment must include the following:

- Hazard identification
- Persons at risk
- Control measures (reasonable and practicable)
- Risk level
- Written record of the risk assessment
- Regular review of the risk assessment

**Hazard** = Anything with the potential to cause harm.

**Risk** = Likelihood and severity of the consequence resulting from that harm.

**All activities must be risk assessed before work begins. Printed copies of the assessment must be stored in the safety file in that area. The risk assessment must be signed by all those involved to ensure that they have read and understand the risks and will abide by them. All risk assessments and safety documents must be authorised and signed off by the Academic Supervisor or Line Manager.** It is not the duty of the Safety Advisor to authorise the work. However, the Safety Advisor is available for advice.

Guidance should be obtained from the Academic Supervisor and Line Manager in the first instance. School Safety Advisors and Specialist Safety Advisors can also advise. Learning and Organisational Development (L&OD) offers [TLCO300](#) Principles of Risk Assessment (e-Learning) course.

It is the responsibility of the Academic Supervisor and Line Manager to ensure:

- All risk assessments are valid, suitable and sufficient
- All personnel know and understand how to work safely in the workplace
- All personnel comply with details specified on the risk assessment
- The risk assessment is reviewed before any changes to procedure take place
- All risk assessments are reviewed on an annual basis (as a minimum), or sooner if any significant changes occur (e.g. relocation).

Vulnerable persons must be given additional considerations when risk assessing a procedure. These may include:

- New and expectant mother
- Anyone with a physical disability
- Anyone with health issues that may affect their work
- Anyone with health issues that may be exacerbated by their work
- Anyone under the age of 18

The University's guidance on Risk Assessment can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/ra/>

Example risk assessments can be found on the Department intranet:

<http://staffnet.cmsstage.manchester.ac.uk/physics-and-astronomy/health-and-safety/risk-assessment-library/>

JBO specific Risk Assessments can be found through the [JBO intranet Health and Safety page](#).

**For all high risk activities, a safe system of work (SSOW) or safe operating procedures (SOP) must accompany the risk assessment.**

## **2.29. Safety Concerns**

Any Health and Safety concerns should initially be raised with your line manager/supervisor. Please contact the School Safety Advisor (Department of Physics) if any concerns remain unresolved or outstanding. If necessary, these concerns can be raised at the Health, Safety and Wellbeing Committee on your behalf by the appropriate representative or with Central Safety Services.

## **2.30. Smoking**

Smoking and vaping is not permitted in any part of the Department and must be at least 5m away from building entrances.

## **2.31. Terrorist Attack (Fire Arms and Weapons Attack)**

Recent events in the UK and around the world remind us all of the terrorist threat we face. Police and security agencies are working tirelessly to protect the public but it is also important that as a Department we remain vigilant and aware of how to protect ourselves if the need arises.

If you are caught up in an incident the 'run, hide and tell' - guidance can be applied: -

**RUN** – run to a place of safety. This is a far better option than to surrender or negotiate. If there is nowhere to go then.....

**HIDE** – it’s better to hide than to confront. Remember to turn your phone to silent and turn off vibrate. Barricade yourself in if you can. Then finally and only when it is safe to do so.....

**TELL** – tell the police by calling 999.

At JBO there are Emergency grab bags at various locations around the main control building; these are shown on the site maps around the Observatory.

These contain survival items including emergency rations, a bivvi bag, thermal blankets, a torch, first aid kit, wind-up radio and light sticks. They are for serious emergencies only.

## **2.32. Training**

Managers and supervisors shall ensure that all staff and students are trained and competent to implement the relevant working practices and procedures in a safe manner.

All training will be supported by the provision of appropriate information, instruction and close supervision until the PI or manager is confident that the individual is able to consistently use appropriate techniques to work safely.

All staff and students will be adequately trained to carry out the tasks expected of them, both technically and in regards to health and safety. Managers and supervisors will identify training needs via Risk Assessment, Induction and Personnel Development Review processes.

Staff and students all have a duty to ensure they are adequately trained for the tasks they carry out. Where necessary, all staff and students shall attend training and/or instruction programmes provided to allow them to carry out their work activities safely.

Learning and Organisational Development offer many Health and Safety related courses; their catalogue is available online via:

<https://www.staffnet.manchester.ac.uk/staff-learning-and-development/learning-pathways/professional-and-technical-development/health-and-safety/>

The Department H&S Intranet recommends the following training courses:

<http://staffnet.cmsstage.manchester.ac.uk/physics-and-astronomy/health-and-safety/training/>

Other training may be offered in-house. Equipment training is usually available locally by suitably trained staff within the laboratories and workshops; the ‘responsible person’ for this area should be contacted in the first instance with any additional requirements. All training provided will be recorded by the trainer and available for inspection, audit or review as necessary. **Training certificates should be kept within the areas safety files.**

Wherever possible, training will be provided either in-house or by the University Learning and Organisational Development (L&OD). If this is not possible, we will seek to make regular arrangements for specific training needs with an external company. At JBO, this is done through the Site Safety Advisor. The Site Safety Advisor will keep a record of all mandatory H&S training undertaken and this can be supplied to the employee on request.



Refresher training should take place at regular intervals, typically every 3-5 years depending on the training, to ensure bad practices are not occurring and any amendments to legislation are implemented.

See specific workplace hazards arrangement sections for recommended training courses links.

### **2.32.1. Competency Records**

Competence can only be assured when a person has been assessed in their ability to carry out their work safely, usually by observation or testing and is separate to training. Examples include working with cryogenic liquids, compressed gases, machinery (this list is not exhausted and may contain other activities in your area). The responsible person of the area should decide which activities require competency records in order for the users to work safely and unsupervised.

A record of the practical assessment is available on the Department intranet under the forms section.

<https://www.staffnet.manchester.ac.uk/media/eps/chemistry-intranet/physics/P&A-Competency-Recording-Sheet.docx>

These forms should be completed and placed in the safety files, when the trainer is confident the trainee can perform the task competently and safely without supervision and the trainee feels competent to perform this task safely and independently.

## **2.33. Travel**

### **2.33.1. Travel**

It may be necessary for you to travel in the United Kingdom and outside the UK in order to fulfil or enhance your work or research obligations.

All travellers intending to travel in the UK and overseas on University business must discuss their plans and associated activities with their line manager (or, in the case of students, their academic supervisor) and **request prior approval** (pre-travel authorisation) before making any related travel arrangements or commitments.

Pre-travel authorisation (PTA) will include:

- Purpose of trip pre-approved by line manager
- Finance pre-approved by budget holder / line manager
- Risk assessment checked by line manager

To ensure we comply with our duty of care, all travel arrangements that can be pre-booked in advance must be arranged through the University appointed travel agent, [Key Travel](#). **Airbnb are not advised by the University**, as health and safety standards of the accommodation are not checked and not covered by University insurance.

**All travel must have an appropriate risk assessment (RA).**\* If your activities will be adding additional risk to the travel arrangements then these need to be covered in the travel RA also or include in a separate RA.

Examples risk assessment can be found on Physics H&S intranet pages and via the following link:

<https://www.staffnet.manchester.ac.uk/physics-and-astronomy/health-and-safety/risk-assessment-library/>

**Before you travel overseas, visit:**

[AIG Travel Assistance](#) or download the mobile app “AIG Travel Assistance App” and download a country report. You can register for the site using your University email address and our policy number: 0010015245

[The Foreign Commonwealth Office \(FCO\) website](#) and read their country-specific travel advice.

**For UK travel:** use the [UK travel RA template](#) print out the following RA, read and sign and ensure your PI/line manager signs also. Amend if necessary.

**2.33.2. Export Control**

[Please view the University page on Export control which will be updated with the latest info](#)

**2.33.3. [Travel to high risk countries](#)**

Type	High risk countries	Need to seek insurance confirmation
Country	See list <a href="#">display.aspx</a> <a href="#">(manchester.ac.uk)</a>	<ul style="list-style-type: none"> <li>• Cuba</li> <li>• Iran</li> <li>• North Korea</li> <li>• Sudan</li> <li>• Syria</li> <li>• Ukraine, Crimea region</li> </ul>
Action	Complete <a href="#">AIG travel review questionnaire</a>	Notify Insurance Office <a href="mailto:insurance@manchester.ac.uk">insurance@manchester.ac.uk</a>

## 2.34. Vacating Premises and Occupying Premises

Areas may need to be vacated as a result of relocation, refurbishment or closure. Consideration must be given to all relevant health and safety issues throughout the process to reduce the risk of injury, or damage.

Those vacating an area must ensure the space is left as free from hazard and risk, as far as is reasonably practicable, for either reoccupation or hand over to building contractors. Therefore, ensure sufficient time is available to plan and carry out any identified action.

Those occupying an area expect, so far as is reasonably practicable, that it is free from risks created by the previous occupants. Those occupying a new area will also need to manage their move appropriately giving due consideration to the new environment and any local arrangements and ensure the room is appropriate for the risks they will be introducing.

Vacating premises checklist can be found on the [Department H&S intranet forms page](#) and via the following link:

<http://documents.manchester.ac.uk/display.aspx?DocID=22284>

For more guidance see [Safety Services vacating premises and occupying premises](#), [University Arrangements Chapter 23](#) and Estates and Facilities – [Space Allocation and Relinquishment Procedure](#).

## 2.35. Staff Exit Checklist

ALL staff leaving the University must complete the mandatory **Staff Exit Checklist** to ensure all necessary steps are taken **BEFORE** they leave.

On a number of occasions, it is apparent that the correct University exit procedures are not occurring in P&A, this is leading to legacy items and chemicals being found in offices, labs and corridors.

### All Staff

Completing a Staff Exit Checklist is **mandatory** for all staff leaving the University, to ensure all necessary steps are taken before they leave. It should be completed in collaboration between the leaver and their line manager.

<http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=17573>

### Research labs and research offices

Is it the responsibility of the personnel leaving the University, including PhD students, to ensure that they clear out their own personal belongings.

It is the responsibility of the line manager or supervisor to ensure this occurs and also ensure:

- All redundant materials and equipment are disposed of correctly and decontaminated when necessary before disposal or relocation.

- The appropriate University Services and Regulatory bodies are informed
- Records are retained or transferred appropriately.
- Any items, equipment and hazardous materials to be kept are handed over to a responsible person and stored appropriately.

### **2.36. Violence**

Staff and students are advised to report all incidents of violence, including threats, abusive language etc. to the Head of Department, their supervisors or the School Safety Advisor (Department of Physics). The Department will take steps to investigate such incidents and implement remedial measures where required.

Violent incidents, however minor, should be recorded on the University's Accident forms. All cases of physical assault need to be reported to the police without delay.

### **2.37. Waste Non-Hazardous**

All staff and students within the Department are expected to keep waste to a minimum and remove items that are no longer of use in order to meet the University's sustainability goals and reduce the risk of fire. Receptacles for general waste and items to recycle are located throughout Schuster and Alan Turing and all building users are expected to recycle as much as possible.

Schuster back door can be used to dispose of unwanted items.

Alan Turing has a waste yard in-between George Kenyon and Roscoe building. There are also general and recycle waste bins located in all corridors in both buildings.

If you have large items that require removing, please liaise with House Services (notices in all toilets) or this can also be requested at reception.

The [A-Z of waste types](#) is a useful guide to general waste disposal.

#### **Schuster's approved routes of non-hazardous waste disposal are:**

- Glass (not broken) – glass bin near back side door.
- Batteries – battery bin in loading bay and on various floors.
- Confidential material – shredded on various floors.
- Cardboard – flattened and put in steel cages by back side door.
- Compactible/General waste – hoppers by back side door.
- Electrical appliances – cage by bin area near back side door.
- IT equipment – contact IT services.

**Alan Turing's waste yard is located in-between George Kenyon and Roscoe building.** Alan Turing's approved routes of non-hazardous waste disposal are:

- Glass (not broken) – glass bin in waste yard (or green glass wheelie bin for events).

- Batteries – battery bins/buckets located on most floors. Collected from Campus cleansing in waste yard.
- Confidential material – shredded on various floors.
- Cardboard – flattened and put in steel cages in waste yard.
- Compactible/General waste – skips in waste yard.
- Electrical appliances – collected from waste yard on contact with Campus cleansing.
- IT equipment – contact IT services.

Jodrell Bank Observatory's waste disposal streams do vary from campus. If you are unsure about how to dispose of something, please contact the Site Safety Advisor.

A series of short recycling videos showing how various waste streams are recycled can be found [here](#).

### **2.38. Work Experience / Placement Students / Study Abroad**

This includes work placements in the UK, and study in Europe and study further abroad.

UK placements must meet with the School Safety Advisor (Department of Physics) for a health and safety briefing before commencing their work placement. Once at their work placement they must submit a risk assessment to the School Safety Advisor (Department of Physics) by a date agreed by their academic supervisor to ensure that any health and safety concerns can be addressed promptly.

In addition to the requirements of the International Programmes Office (IPO) for Study in Europe and Study Further Abroad, the Department requires all undergraduate students studying in Europe or further abroad to attend a health and safety briefing session with the School Safety Advisor (Department of Physics) before departing. Once abroad they must complete health and safety questionnaire and send back to the School Safety Advisor (Department of Physics) by a date agreed by their academic supervisor so that any health and safety concerns can be addressed promptly.

Academic supervisors should make regular contact with the students to ensure their wellbeing whilst working or studying away from the University.

Offering a work experience or work shadowing placement to a person **under 18 requires a consent form** from their parent and school/college, a [Work Experience Permission form](#), and a [risk assessment](#) (which will inform whether a DBS is needed). These will need to be completed and signed off a **minimum of 2 weeks before the start date** of the placement. Supervisors will also need to read and follow the work experience section in the [University's Child Protection Policy](#) (pg. 17/18).

Guidance document on work experience and placement can be found here:

<https://www.staffnet.manchester.ac.uk/media/eps/chemistry-intranet/physics/Guide-to-Work-experience-&-Placements.docx>

Further guidance on study abroad programmes can be found below:

<http://www.manchester.ac.uk/study/international/study-abroad-programmes/>

### 3. General Workplace Hazards

#### 3.1. Display Screen Equipment (DSE)

The Department has arrangements in place for inspecting workstations to assess any potential health and safety risks to users. A Display Screen Equipment user is defined as an employee who habitually uses display screen equipment as a significant part of their normal work, typically defined as **more than one hour per day**.

All DSE users are required to complete a DSE self-assessment either:

Online (all P&A) - <https://forms.office.com/e/J2vEWRujSA>

Or

Paper based – [DSE paper based self-assessment form](#)

Online forms are automatically sent to FSE safety, please send paper-based forms to fse safety [fse.safety@manchester.ac.uk](mailto:fse.safety@manchester.ac.uk)

Where issues exist following completion of the assessment, the Department DSE Assessor will arrange to meet with individuals, where a full DSE assessment may be necessary. If problems are still occurring after a full DSE assessment, then the DSE assessor or user should refer the individual/themselves to Occupational Health.

Guidance on how to set-up your workstation correctly can be found on Safety Services' link below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/dse/>

DSE self-assessment should occur at least every 2 years. However, if there is a change in circumstances, for example moving office, new equipment is provided or the staff member experiences musculoskeletal pain, a new DSE self-assessment should be completed.

If working from home, a DSE self-assessment should also take place for this scenario.

##### 3.1.1. Free eye tests

Free eye sight tests are available during term time only from the Teaching Clinic in University Vision Services based in Carys Bannister Building Tel. 0161 306 3860.

DSE users should have a sight test at a registered optician of their choice. In order to claim back the cost of eyesight test, staff need to obtain a receipt from their optician and claim this back through the University's expenses system.

If the optician advises that spectacles are required specifically for DSE use, staff should get this **in writing** and claim this back through the expenses system (subject to a maximum amount; currently £90).

Line managers will need to see evidence from the optician before approving the claim through expenses.

<https://www.occhealth.manchester.ac.uk/wellbeing/health-safety/>

Please note: At the present time the regulations state that bifocal and varifocal spectacles are not normally recommended for DSE work.

### **3.2. Driving at work**

Specific arrangements for the JBO site can be found in section 6

The management of work-related driving must take into account the requirements of health and safety legislation and road traffic law. Driving at work applies to all staff who drive on University business, regularly or infrequently, including those who use their own vehicles.

Managers must ensure that risk assessments are undertaken in relation to all work activities including any driving in connection with University business. The scale and detail of the risk assessment should be proportionate to the risk.

An example risk assessment on the Physics H&S intranet page for [driving at work](#) can be used as a starting point for your own assessment.

JBO has its own fleet and site specific arrangements for driving and vehicles in [Section 6.2](#).

Further guidance can be found on the safety services page via the link below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/driving/>

### **3.3. Electrical Equipment**

Specific arrangements for Jodrell Bank Observatory can be found in Section 6.

The Department has a duty to comply with the **Electricity at Work Regulations 1989** and to maintain all electrical equipment in a safe condition as faulty electrical equipment can cause death or serious injury by electric shock, burns and fire. This applies to all work areas of the University, all electrical apparatus and installations. All equipment should be purchased from a University approved supplier, and conform to British Standard (CE mark).

#### **Basic installation**

The Directorate of Estates and Facilities manages the electrical supplies and arrange for their statutory testing every 5 years. Individuals who find faulty or dangerous wiring problems associated with the fixed wiring installations should report them to the Estates Department on 0161 275 2424 or online [here](#).

#### **Portable appliances**

Portable electrical equipment is managed by the Department and is subject to Portable Appliance Testing (PAT) at regular appropriate intervals, which must be carried out by a trained and competent person. The I&F TOM liaises with equipment users to organise a testing programme. Following a successful electrical test, each piece of equipment is labelled and dated.

All new electrical items and any that has been permanently relocated to a different building are required to be PAT tested before use.

High risk portable appliances (soldering irons, power supplies, electric drills, kettles, etc.) are checked and tested annually, lower risk items like computer workstations, which are classed as semi-permanent fixtures, are checked and tested every 4 years. All portable appliances, including separate mains cables, which have been checked and tested, are clearly labelled.

In the Department annual PAT testing occurs annually for laboratories and workshops and every 4 years for offices.

### **Non-University of Manchester Property**

The Department has a duty to ensure that all portable appliances are safe and therefore, any equipment (kettles, laptop power packs, etc.) brought into University of Manchester by staff, students or visitors for use at work must be fully checked and tested. All personnel should seek the authorisation of the Academic Supervisor or Line Manager before bringing personal electrical equipment into the workplace. All such items must be fit-for-purpose, CE marked and tested by a trained and competent person before use. If for any reason an individual refuses to allow his personal electrical equipment to be checked and tested, then that equipment must be removed from University of Manchester property immediately and permanently.

### **Fixed appliances**

Fixed electrical appliances are managed by the Department and are subject to Fixed Appliance Testing (FAT) every 5 years. This must be carried out by a qualified electrician. The I&F TOM liaises with equipment users to organise a testing programme. Following a successful electrical test, each piece of equipment is labelled and dated accordingly.

### **All electrical equipment users must:**

- Carry out pre-use visual checks and regular examination of the equipment for signs of damage or deterioration
- Carry out safe operation of the equipment, according to training, risk assessment and operating manuals



- Only use equipment that is fit-for-purpose or use equipment in a suitable environment (e.g. wet environment with an residual current device (RCD))
- Report defects to the Academic Supervisor, Line Manager or Technical Support Staff
- Not overload power supplies or “daisy-chain” cables and extension leads
- Not trail cables across access and egress
- Ensure leads and cables do not constitute a trip hazard
- Not modify equipment unless qualified and competent to do so
- Not use equipment that has not been electrically tested

Tables/desks often have cable trays or other design features which can assist with managing cables. Placing the cables around the back of desk/tables instead of the front is better practice and decreases the risk from slips and trips.

It is the responsibility of the Academic Supervisor and Line Manager to ensure defective equipment are taken out of use.

### **Electronic workshop**

The Faculty has an electronic workshop based in MECD, Building A, room GA035. Where they can fix and make electronic equipment for your needs.

Please book the job in the PPMS as below:

<https://corefacilities.manchester.ac.uk/req/?pf=18&project=true&form=1182>

Then label your item with the PPMS no, contact name, building name, and contact phone number.

To send your items to the electronics workshop, options are

- 1) If your job is too large or fixed location, we will contact you when we are available to come over to assess.
- 2) You can bring the portable labelled items to the electronic workshop MecD GA.035 (quickest method).
- 3) You can contact Stephen Hamer in MecD central stores to arrange a collection from a agreed collection point, normally your department stores and stating the delivery point as MecD central stores.

For return of your items you can collect from the MecD electronic workshop or arrange stores delivery to your Department stores.

The University’s Guidance on Electrical Equipment can be found [here](#).

### 3.4. Fieldwork

The definition of fieldwork is very wide: "any work carried out by staff or students for the purposes of teaching, research or other activities while representing the institution off-site".

The UCEA Guidance on Health and Safety in Fieldwork covers the following range of activities:

- attendance at conferences and other institutions which may be relatively low risk,
- to the high risk challenging conditions of fieldwork in remote and hostile locations

The [University Arrangements](#) enable a risk-based approach to the safety management of fieldwork activities, which must be followed for all fieldwork activities.

High risk fieldwork activities must be signed off by the Head of Department.

There are example risk assessments which can be used as a starting point to your own assessment for [Low risk fieldwork in the UK](#) and [Low-risk field work and field trips in low or moderate risk destinations outside of the UK](#).

### 3.5. Manual Handling

Manual handling is one of the most common causes of injury at work. Manual handling is defined as the transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or bodily force. Manual handling activities can also cause Musculoskeletal Disorders (MSDs) such as upper and lower limb pain/disorders, joint and repetitive strain injuries of various types.

Hazardous manual handling operations should be avoided wherever practicable to avoid risk of injury. Where it is not possible to do this a **risk assessment should be carried out** which considers the four elements, collectively referred to as 'TILE', below.

- Task
- Individual capability
- Load
- Environment

Handling aids and equipment should be used where possible. Lifting in pairs can also reduce the risk of injury.

Some tasks may require a more detailed manual handling assessment, such as the **MAC** or **ART** tool. Guidance on these assessments tools can be found on via the safety services link below:

[http://www.healthandsafety.manchester.ac.uk/toolkits/man\\_hand/](http://www.healthandsafety.manchester.ac.uk/toolkits/man_hand/)

Online training for manual handling can be found here:

<https://app.manchester.ac.uk/training/profile.aspx?unitid=8344&parentId=4>

Workshop staff and others that lift heavy and unwieldy loads on a regular basis are recommended to take the following more detailed practical course:

<https://app.manchester.ac.uk/training/profile.aspx?unitid=7617&parentId=4>

Following on from a number of manual handling accidents in the Department, including a serious one. A more comprehensive manual handling RA form should be completed for complicated and heavy lifts.

**All manual handling operations in the Department should be risk assessed** and signed off by your line manager or PI, where the risk is significant, these should also be sent to the School Safety Advisor.

The [manual handling checklist](#) on the Physics intranet should be used to assist you in considering the risks involved and how best to manage and control these.

The checklist includes information on purchasing, design, manufacturing and end use of equipment.

Blank manual handling RA form:

<https://www.staffnet.manchester.ac.uk/media/eps/chemistry-intranet/physics/Manual-Handling-Risk-Assessment---Blank.docx>

Example of manual handling RA for moving heavy equipment

<https://www.staffnet.manchester.ac.uk/media/eps/chemistry-intranet/physics/Example-Manual-Handling-Risk-Assessment---Moving-Equipment.docx>

### 3.6. Offices and PC Clusters

It is the responsibility of persons using these spaces to ensure that the rooms are kept in a tidy and safe state, and that visitors are not endangered in any way.

Leads and cables must not constitute a trip hazard. Do not overload shelves or store heavy/large items at height. Remove potential trip hazards (boxes, books etc.) from walkways.

**Samples and chemical reagents must not be stored in offices.**

All staff and students must abide by the PC cluster rules which are posted on the doors and inside the clusters. **No food or drink is allowed in any PC Cluster in Schuster.** It is unhygienic for communal use computers and also increases the costs of replacing computers through damage.

Offices should be inspected yearly using the [office self-inspection checklist](#). One form per office.

Example [RA working in general workspaces and offices](#) can be used as a starting point to your own office risk assessment.

### 3.7. Slips, Trips and Falls

The University has a strategy and action plan to reduce accidents and injuries caused by slips and trips (including those on steps and stairs) but everyone can play their part by:

- reporting accidents and near misses
- taking action when defects, spills, obstructions and other potential causes of slips or trips are seen – before someone is injured.
- reporting building defects to the Building Manager or Technical Operations Manager.

Further guidance on preventing slips, trips and falls can be found on safety services website link below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/slipsandtrips/>

### 3.8. Stress and Anxiety

The Department recognises that pressure at work can be a good thing, it motivates and challenges us. However too much pressure can have an adverse reaction, lead to feelings of not coping and can lead to mental or physical illness that requires additional support.

Sources of stress at work include;

- Demands – this includes issues such as workload, work patterns and the work environment.
- Control – how much say the person has in the way they do their work.
- Support – this includes the encouragement, sponsorship and resources provided by the Department, line management and colleagues.
- Relationships – this includes promoting positive working to avoid conflict and dealing with unacceptable behaviour.
- Role – whether people understand their role within the Department and whether the Department ensures that they do not have conflicting roles.
- Change – how change (large or small) is managed and communicated in the Department.

Managers, supervisors and principal investigators along with staff and students within the Department must work to limit sources of stress.

The following changes in behaviour may indicate stress;

- Physical symptoms include; tiredness, indigestion and nausea, headaches, aching muscles or palpitations.
- Mental ill-health symptoms include; being more indecisive, finding it hard to concentrate, loss of memory, feelings of inadequacy, or low self-esteem.
- Emotional symptoms include; getting irritable or angry, anxious, hypersensitive, or feeling drained and listless.

- Behavioural symptoms include; noticeable changes in performance, changes in patterns of attendance, recurrent short-term absences or long-term absence.

Managers, supervisors and principal investigators should actively monitor staff and students for any of these indicators of stress and discuss it with the individual concerned as soon as possible to find solutions to any issues they may have. Managers, supervisors and principal investigators should refer staff and students to [Occupational Health](#) or the [Counselling Service \(students\)](#), [Counselling Service \(staff\)](#) for further advice where necessary but the responsibility remains with them to resolve.

Managers, supervisors and principal investigators should take steps to ensure that their own management practices and style do not contribute to work-related stress.

Staff and students who recognise these symptoms in themselves should raise the issue with their manager, supervisor or principal investigator if possible as early as possible so that early intervention can take place.

Staff and students can also refer themselves in confidence to [Occupational Health](#) or to the [Counselling Service \(student\)](#), [Counselling Service \(staff\)](#) or their GP.

The University of Manchester Counselling Service are a team of professional counsellors and psychotherapists offering confidential help with any personal issues affecting work/study, self-esteem, sexuality, relationships, mental health or general wellbeing. They are available to all University of Manchester students.

Health Hero are a specialist external provider of staff wellbeing and mental health support services. Support is free and anonymous.

Colleagues can access a range of support from:

- Telephone Support
- Counselling – online and face to face
- Signposting to Specialist Agencies
- Health Hero Wellbeing Hub Information & Resources
- General Health & Wellbeing Support
- Legal Information
- Money & Debt Support
- Support for Managers

Please try the staff EAP in the first instance. If Health Hero are unable to meet your needs then the Counselling & Mental Health Service can offer a review appointment: Get Help (The University of Manchester)

The Counselling Service also runs a wide range of workshops to help manage stress and improve wellbeing for both staff and students.

Guidance for [staff](#) and guidance for [managers](#) is available via Human Resources.

[Chapter 35](#) of the University's general arrangements also gives further advice and support.

A training course is available from the Learning and Organisational Development:  
[THS16E](#) Work Related Stress: Identification, Prevention & Management

Support Staff Experiencing Stress and Difficulties with their Mental Health -  
[online.manchester.ac.uk/courses/1/I3004-TRAIN-TM-S21E-8552-40041/content/13617195\\_1/scormdriver/indexAPI.html](https://online.manchester.ac.uk/courses/1/I3004-TRAIN-TM-S21E-8552-40041/content/13617195_1/scormdriver/indexAPI.html)

Further guidance and support can be obtained from the Occupational Health and Counselling Service. Referrals can be self-made or from the Academic Supervisor and Line Manager.

<http://www.occhealth.manchester.ac.uk/>  
<https://www.counsellingservice.manchester.ac.uk/>  
[Staff Support \(The University of Manchester\)](#)

University's guidance on Stress can be found below:  
<http://www.healthandsafety.manchester.ac.uk/toolkits/stress/>

### 3.8.1. Wellbeing

The University and Department is committed to providing a healthy working environment and improving the quality of working lives for all staff and students.

The Department has **Wellbeing champions** who you can contact for further advice and support:

Students – The student hub in Alan Turing, SoNS Wellbeing -  
[SoNS.Wellbeing@manchester.ac.uk](mailto:SoNS.Wellbeing@manchester.ac.uk)

Staff - Andrew Markwick [andrew.markwick@manchester.ac.uk](mailto:andrew.markwick@manchester.ac.uk)

For more information, guidance and activities for both staff and students, follow the links below:

**Staff:** <https://www.staffnet.manchester.ac.uk/wellbeing/>

**Students:** <http://www.studentsupport.manchester.ac.uk/taking-care/wellbeing/six-ways-to-wellbeing/>

<https://www.staffnet.manchester.ac.uk/supporting-students/training/resources/>

## **4. Laboratory and Workshop Safety Arrangements**

### **4.1. Biological work in Schuster**

A biological material is a micro-organism, cell culture, or human endoparasite, whether or not genetically modified, which may cause infection, allergy, toxicity or otherwise create a hazard to human health. They include bacteria, viruses, parasites and fungi.

Plants, animals or micro-organisms that have changed through direct manipulation of an organism's genome using biotechnology are termed genetically modified organisms or GMOs. Those who plan to or are carrying out biological work can contact the FSE BSA team.

#### **4.1.1. Biological Risk Assessment and application**

- All work involving biological materials (non-GMO) including Hazard Group 1 requires an assessment on the Application to Handle Biological Materials and COSHH Risk Assessment forms (also known as BioCOSHH).
- All work with genetically modified organisms requires a GM relevant additional Risk Assessment to be completed along with an application form.

The completed biological/GM Risk Assessment applications must be signed by the Academic Supervisor and submitted to the FSE Biological Safety team (BSA) who facilitate the approval process. Any changes to an existing assessment must go to the FSE's BSA for approval.

Work with biological agents or GMOs is not permitted without the relevant approved application forms and Risk Assessments.

The BioCOSHH and GMO application approval process varies depending on the Hazard Group (HG) of the non-GMO biological agents or the classification of the GMO:

- New and renewal HG 1 BioCOSHH and Class 1 GMO applications may be approved by the BSA before work can commence. The FSE Biological/GM Safety Committee will be notified of all applications and retrospective approval given.
- Routine and renewal HG 2 BioCOSHH and Class 2 GMO applications may be approved by the BSA before work can commence. The FSE Biological/GM Safety Committee will be notified of all applications and retrospective approval given.
- New HG 2 (or above) BioCOSHH and Class 2 (or above) GMO applications will need FSE Biological /GM Safety Committee approval before work can commence. The BSA will forward on any applications to the committee and report back as appropriate.
- Some biological activities are reportable to the HSE. BSAs and FSE Biological /GM Safety Committee will advise on the reporting procedure and facilitate the submission of HSE notification.

#### **4.1.2. Biological Safety Training**

- All Staff and students who are planning to work with biological agents or GMOs must complete a Biosafety awareness training first which is organised by the FSE BSA team.
- Any specialist/practical training e.g. use of Autoclave, lab equipment, aseptic techniques must be identified by the Academic Supervisor or manager and arrangements must be made for training and records kept up to date.

#### **4.1.3. Inspection and monitoring**

- Bio lab self-inspections for Containment Level 2 and above is recommended out at regular intervals by the responsible person and records kept.
- Formal Biosafety Inspections will be carried out by the BSA team at least once a year for each Bio labs in the Department. Responsible persons of the area, and staff/student representatives must attend the inspection.
- Additional inspections may be conducted in respective areas identified by the FSE Biological /GM Safety Committee.
- Class II microbiological safety cabinets must be serviced and inspected at least every 14 months by qualified engineers.

#### **4.1.4. Health surveillance and fitness to work**

Staff and postgraduate students working within the bio area are required to register with Occupational Health via the occupational health questionnaire for health surveillance. Occupational Health staff will arrange for any necessary screening / vaccinations etc. depending on the nature of the job and the work activities.

- The manager, academic supervisor or Academic Supervisor should ensure that staff, researchers and students have registered with Occupational Health.
- Any change to the nature of the biological work or an individual's health status is to be notified to Occupational Health.
- In case of actual or suspected contact with a biological agent, whether through inhalation, injection, puncture, ingestion, or contact with eyes, it is required to contact Occupational Health.

The University's guidance on Biosafety can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/biogm/>

## **4.2. Chemical Safety**

Prior to any use of chemicals, a Chemical Risk Assessment (CRA) or a general risk assessment with the chemicals specified **must be carried out**. The main chemical hazards fall into two categories:

1. Those that may harm health and come under Control of Substances Hazardous to Health Regulations (COSHH)
2. Those that may pose a fire and/or explosion risk and come under the Dangerous Substances and Explosives Regulations (DSEAR)



Many chemicals have both type of hazards associated with them and both need to be considered together and appropriate controls implemented.

Substances hazardous to health include:

- Anything classified as toxic, very toxic, harmful or irritant under the Chemicals (Hazard, Information and Packaging for Supply) Regulations 2009 (CLP).
- Anything with a Hazard Code and a Hazard Statement, according to manufacturer's Safety Data Sheet (SDS).
- Substances with a Workplace Exposure Limit (WEL). These are listed on the [EH40 list](#).
- Hazardous substances listed in the HSE publication Approved Supply List.
- Dust of any kind when present in the following quantities: 10 mg/m<sup>3</sup> inhalable dust, 4 mg/m<sup>3</sup> respirable dust, except where toxicity indicates a lower exposure level is required.
- Microorganisms that create a hazard to health as part of, or a result of, the work activity.
- Anything that creates a comparable risk to health to any of the above.

The Academic Supervisor and Line Manager are responsible for ensuring a satisfactory risk assessment/CRA form is in place and implemented. Completed documents should be kept in the Lab Safety Files and should be available for general use, inspection and audit. They must be signed by the line manager or supervisor and also all users of the chemical.

CRA forms should be reviewed when any changes to the process is planned, if a vulnerable person (e.g. expectant mother) begins working in the vicinity, even if they are not the person handling the hazardous substance, following an accident or near-miss, following changes in legislation or following recommendations from Safety Advisors or Safety Services.

The standard [Chemical risk assessment](#) form template can be found in the "forms" section of the Physics H&S intranet. A safety data sheet (SDS) should be provided with each new chemical, which will allow you to complete the Chemical risk assessment form. [Guidance](#) on how to fill out this form can be found in the "forms" section of the Physics H&S intranet. Example Chemical risk assessment can also be found at the following link below:

<http://staffnet.cmsstage.manchester.ac.uk/physics-and-astronomy/health-and-safety/coshh-library/>

The Faculty is currently running Chemical risk assessment awareness training sessions, check out Beeline for details.

#### **4.2.1. Fitness to work Certificate**

Those who work with Chemicals, Biological agents and Carcinogens, Mutagens and Reproductive toxins and sensitisers should receive a "fitness to work" certificate from Occupational Health **prior to handling**.

Those requiring a fitness to work certificate should fill out the following form and send back to occupational health.

<http://documents.manchester.ac.uk/display.aspx?DocID=40533>

Fitness to work certificates are valid for 12 months, it should be reviewed annually. Occupational health should contact you when your review is due. Further guidance and the CMR health surveillance questionnaire if you have been exposed to a CMR can be found on the below link <http://documents.manchester.ac.uk/display.aspx?DocID=13905>

#### **4.2.2. Handling, storage and disposal**

All hazardous chemicals must be stored within laboratories/workshops/cleanrooms or specific storage areas and **not within offices.**

All hazardous substances must be handled, stored and disposed of according to the risk assessment/Chemical Risk Assessment form.

Spill kits should be readily available for use in an emergency in laboratories and workshops. Risk assessments or CRA forms should state where the closest spill kit is. Stores also have a spill kit available.

**Each lab/workshop/clean room area should keep an up-to-date inventory of all the chemicals stored.** The University uses a **mandatory chemical inventory system** called LabCup to do this. Each area has a LabCup administrator who can add you to LabCup, if unsure ask the safety advisor for more details of who your local LabCup administrator is. See the below link for more details and short videos on how to add and remove chemicals in your area. If a chemical has an expiry date this must be added to LabCup.

<http://staffnet.manchester.ac.uk/physics-and-astronomy/health-and-safety/labcup/>

Any gases stored within an area must be assessed to ensure that adequate ventilation is in place for the gas/gases to dissipate without causing a risk to users should an uncontrolled (or controlled) release occur. If this cannot be shown, then appropriate warning systems must be installed. This should be assessed by the responsible person.

All sample containers must be suitable for the chemicals being used and labelled with user's name, chemical composition / concentration and date. All chemicals must be stored upright. Storage cabinets must be trayed to minimise the effects of a spill/leak from a chemical.

Appropriate safety signage should be visible externally on the storage facility and on the external door of the area.

Quantity stored or used must be kept to a minimum and the total volume of extremely or highly flammable liquids must be below 50 litres per lab.

Flammable & oxidising substances must be stored upright in suitable flammables cabinet. If stored at 2-8°C, fridges must be spark-proof and used away from sources of ignition or direct sunlight. Secondary containment will also be required if stored in a fridge or freezer to reduce the risk of a flammable atmosphere building up.

Corrosive substances should be stored upright in appropriate labelled corrosives cabinet. **Diphoterine** must be present in any area using corrosive substances (see [first aid arrangements](#))

Incompatible substances should be segregated at all times; secondary containment will be required, where due to space issues incompatibles must be stored in the same cabinet.

Lab benches and fume cupboards should not be used for storing chemicals.

Hazardous chemicals in use should not be left unattended.

Old or redundant chemicals should be disposed of correctly as soon as possible. Do not accumulate chemicals as this adds additional risks. Many chemicals decompose/oxidise with time.

A useful guide on the [Storage and Segregation of Hazardous Chemicals](#) and a poster on [Do's and Don'ts of Chemical storage](#) can be found on the Physics H&S intranet.

#### **4.2.3. Transporting chemicals within or between buildings**

The transportation of chemicals between University buildings is discouraged but where necessary the activity must be sufficiently risk assessed with the chemicals suitably labelled and packaged

Chemicals must be transported in suitable robust containers (e.g. solvent Winchester carriers) and a hazardous spill kit must be on hand during transit. Chemicals must be transported using a buddy system, so that if an accident occurs the emergency procedures identified in the risk assessment can be quickly implemented.

No chemical, gas cylinder or cryogenic liquid should be transported on a public pavement or road, as this requires a specialist licence and is prohibited through the ADR and CDG regulations.

**The transportation of chemicals away from University premises is subject to regulatory control and advice from the School Safety Advisor (Department of Physics) must be sought.**

An example RA, which can be used as a starting point for your own transport activity can be found on the Physics intranet example RA's.

[https://www.staffnet.manchester.ac.uk/media/eps/chemistry-intranet/physics/FSE\\_Generic-RA\\_Transport-of-Chemicals-and-Research-Samples.docx](https://www.staffnet.manchester.ac.uk/media/eps/chemistry-intranet/physics/FSE_Generic-RA_Transport-of-Chemicals-and-Research-Samples.docx)

#### **4.2.4. Carcinogens, Mutagens, Reproductive Toxins (CMRs) and Sensitisers**

Usage of CMRs, Respiratory Sensitisers or Skin Sensitisers must be adequately controlled, with exposure level eliminated or minimised to below the Workplace Exposure Limit (WEL).

Any risk assessment should consider all persons who can enter the area, such as house services, who will have limited knowledge of the hazards within.

Details must be specified in the risk assessment or CRA form. They can be identified by the Hazard Statements in the Safety Data Sheet (SDS)

CMRs can only be used if:

- No safer alternative can be found
- User is over the age of 18
- User is a trained and competent person
- User is not immunocompromised, not knowingly pregnant or a nursing mother (if user falls into one of these categories, **work with the CMR must be suspended until a personal risk assessment is in place**)
- Appropriate control measures are available, e.g. fume cupboard
- Users attend health surveillance with Occupational Health (receive a fitness to work certificate before work commences).

Use of CMRs and sensitisers in undergraduate teaching labs should be avoided.

The Academic Supervisor and Line Manager are responsible for the safe use of CMRs and sensitisers. Information, training and supervision must be adequate and the user's competency level must be assessed. Records of users and occupational health surveillance reports must be kept for 40 years.

Exposure or suspected exposure to CMRs and sensitisers must be reported to the Academic Supervisor, Line Manager or Safety Advisor immediately.

The University's guidance on CMRs can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=12107>

#### **4.2.5. Polychlorinated biphenyls (PCBs)**

PCBs were once widely deployed as dielectric and coolant fluids in electrical apparatus, carbonless copy paper and in heat transfer fluids. Examples of equipment that may contain PCBs within the Department include pre 1987-microscopes, old X-ray equipment, pre-1987 industrial equipment (e.g. lathes), electrical transformers, high voltage equipment and vacuum pumps.

Any equipment suspected of containing PCBs must be registered with the Environmental Agency (EA). Contact the I&F Technical Operations Manager who will add the PCB to the Department inventory.

Any equipment suspected of containing PCBs must be tested. The amount (litres) and concentration (ppm) must be determined. If the amount is under 5 Litres or below 50 ppm, then these can be removed from the EA database.

PCBs are hazardous. Therefore, it is no longer acceptable to have PCB containing equipment in the UK and the equipment needs to be decontaminated or disposed of as soon as possible.

Waste oils or contaminated equipment must only be removed from site by a licensed waste carrier and must be transferred to a permitted waste management facility. A certificate of decontamination or disposal is needed and must be retained. The EA requires evidence of disposal or decontamination. This is normally consignment note numbers or laboratory test reports, though the EA may accept other evidence.

Further Guidance on PCBs can be found via the link below:

<https://www.gov.uk/guidance/polychlorinated-biphenyls-pcbs-registration-disposal-labelling>

#### **4.2.6. Drug Precursors and Chemical Weapons**

Additional legislations govern chemicals that can be used to produce illicit drugs or chemical weapons.

Drug precursors – governed by regulations (EC No 273/2004) set by the European Union.

Chemical weapons – governed by an arms control treaty called Chemical Weapon Convention (CWC).

The University is legally obliged to submit an annual declaration on the purchase, use and/or storage of these chemicals.

The Academic Supervisor and Line Manager are responsible for assisting in the declaration. They must keep accurate records of their chemicals and provide relevant information to Safety Advisors in a timely manner, when requested to do so.

The University's guidance on Drug Precursors can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/returns/precursorchemicalsdrugprecursors/>

The University's guidance on CWC can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/returns/chemicalweaponsconventioncwc/>

#### **4.2.7. Explosive Substances**

Some compounds are inherently unstable and may decompose explosive. Explosives and desensitised explosives are governed by the Explosives Regulations 2014. The purchase, use and storage of these substances may require explosive certificates and licences. Advice must be sought from the School Safety Advisor (Department of Physics) before purchasing these substances.

Mixtures of some chemicals are also explosive. Chemicals should not be mixed together without proper thought and research into the likely outcome. Typically, reactions between substances and strong oxidising agents, such as hydrogen peroxide and perchloric acid, may become explosive. Other substances become dangerous in a fire because of their oxidising properties; they include nitrates, chlorates and iodates. Only minimal quantities of such compounds should be kept in the laboratory. Reactions may become uncontrolled or form explosive compounds and should only be performed after careful planning and the production of a corresponding risk assessment and CRA form.

Strong sodium hypochlorite and hydrogen peroxide solutions must be stored in vented containers because of the potential pressure build-up.

The University's guidance on Explosives can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/returns/explosives/>

#### 4.2.8. Poisons

There are many chemicals classed as poisonous, these are regulated by the Poisons Act 1972. They must be stored, transported, used and disposed of correctly:

- Containers must be impervious to the substance, and be able to prevent escape of the substance.
- Schedule 1 poisons must be stored in a secure and locked designated poisons cabinet, with restricted access. The key must be kept by a responsible person in a separate secure and locked location.
- Method of transport must keep the risk of spillage or accidental release to a minimum.
- They must only be used by trained and competent person.
- Records must be kept for user's details and quantity of usage.
- Surplus or waste must be disposed of appropriately, according to the risk assessment.

For further details, please contact the School Safety Advisor (Department of Physics).

#### 4.2.9. Hydrofluoric acid

This is an extremely dangerous and corrosive acid, which may result in toxic shock, loss of limbs and death. HF must only be used if no other alternative is available. A detailed CRA, risk assessment and safe system of work (SSOW) must be in place **before work commences**. A [SSOW](#) for HF can be found on the Department H&S intranet pages.

- Initial use of HF must be authorised by the School Safety Advisor (Department of Physics).
- All procedures must be risk assessed and authorised by the Academic Supervisor or Line Manager beforehand.
- Usage of HF is restricted between working hours of 09:00 – 17:00. A first aider must be informed before work commences. Lone working with HF is **prohibited**.
- Stock solution must be stored in a locked cabinet and the lab must have restricted access.
- All HF users must be trained until fully competent.
- All HF users must carry calcium gluconate gel, during the procedure and for 24 hours following the usage. The gel must be applied copiously at the first sign of burning and A&E must be attended immediately. The Department also has a **hexafluoride kit** for use with HF, which is located in Schuster Chemistry room B.07.

A short guide to the safe use of Hydrofluoric Acid can be found here:

<http://www.staffnet.manchester.ac.uk/physics-and-astronomy/health-and-safety/videos/>

For further details, please contact the School Safety Advisor (Department of Physics).

#### 4.2.10. Mercury

Mercury (also known as quicksilver) is a silvery white liquid metal at room temperatures. It has been widely used in temperature indicators such as thermometers, and pressure indicators such as barometers and sphygmomanometers, vacuum lines in general and diffusion pumps. Its use continues, but is being phased out except for specialist applications. Mercury is also

highly toxic in liquid and vapour forms, and is capable of being absorbed through the skin, lungs and alimentary system.

Where possible mercury substances and equipment containing mercury should be disposed of and a safer alternative found. Contact the School Safety Advisor if you have mercury substances or equipment containing mercury that requires disposing of.

A mercury spill kit is located in Schuster 1<sup>st</sup> floor Annexe teaching labs, room 1A.05. If a mercury spillage occurs the SSA should be informed and an incident report form completed and sent to Safety Services.

Further Guidance can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=20056>

#### **4.2.11. Accidental Spillage and Loss of Containment**

For any significant spillage that requires the emergency services or exposure to hazardous substances that requires urgent medical help, call:

1. Campus Security on 0161 306 9966 or
2. Emergency Services on 999, followed by Campus Security.

All accidents and incidents, especially those involving a loss of containment, must be reported to the School Safety Advisor (Department of Physics) and Safety Services as soon as possible. Loss of containment includes failure of fume cupboards or microbiological safety cabinets, spillages or splashes. Loss of containment or the complaint of symptoms must be investigated by the Academic Supervisor or Line Manager. An investigation report must be sent to Safety Services, along with all associated risk assessments, Safety Data Sheets, CRA's and Standard Operating Procedures.

Health surveillance must be arranged with Occupational Health following a suspected exposure to hazardous substances. Records will be kept by Safety Services for 40 years.

In addition to the above the following items are listed as either regulated explosives precursors or a reportable explosive precursor:

- Sulphuric acid
- Aluminium powders, magnesium nitrate hexahydrate, and magnesium powders
- Hydrogen peroxide
- Nitromethane
- Nitric acid
- Potassium chlorate
- Potassium perchlorate
- Sodium chlorate
- Sodium perchlorate

The Department does not require a licence for the possession or use of these substances but there are reporting requirements for businesses concerning suspicious transactions, significant loss or theft.

Therefore, there is a **need to store these chemicals correctly and securely** and report any loss or theft to the School Safety Advisor (Department of Physics).

### **4.3. Confined Spaces**

The sub-basement in Schuster is classed as a confined space, only authorised personnel are allowed in this area. Any other visitors or contractors needing access to the sub-basement must be accompanied by an authorised user at all times.

Gas cylinders, cryogenic liquids and chemicals must not be accompanied in lifts where they need to be transported between floors as the confined nature of the lift space could present a significant risk.

At JBO, where possible staff will use mechanical means to avoid entering confined spaces. Due to the nature of the work task undertaken, this may be unavoidable.

If work of this type is required specialist contractors will be contacted to complete the works. A comprehensive assessment must be made by the contractor to ensure suitable safe systems of works and emergency rescue procedures.

### **4.4. Food and Drink**

Food and drink is prohibited in any laboratory, workshop, cleanroom or communal computer cluster for hygiene and safety reasons. The workshop has a mezzanine recreational area where it is acceptable to consume food and drink.

### **4.5. Glassware**

Examine all glassware before use. Never use chipped or broken glassware. Chemistry's glassblowers, located in the basement of the Chemistry building, may be able to repair expensive broken glassware. Dispose of damaged and broken glassware in the designated yellow sharp bins using a dustpan and brush or thick cut resistant gloves; never put broken glass into ordinary rubbish.

### **4.6. Hazardous Waste**

Some types of waste are harmful to human health, or to the environment, either immediately or over an extended time period. This waste is called hazardous.

The University produces numerous types of hazardous waste and has a 'duty of care' to make sure it's disposed of properly.



University guidance is available here:

<http://www.estates.manchester.ac.uk/services/operationalservices/envsvcs/waste/hazardous/>

The Department has its own disposal arrangements for hazardous wastes, which should be detailed in risk assessments or chemical risk assessments (CRA).

Academic Supervisors and Line Managers must ensure the handling, transport and disposal of waste is risk assessed and carried out correctly. The risk assessment or CRA form should identify the correct disposal route.

Empty and thoroughly decontaminated chemical containers can be placed into general waste or a recycled waste stream. Their lids must be removed and the hazardous substance on the label, along with hazard symbols must have been crossed out with a black marker pen.

Unwanted chemicals and hazardous waste can be disposed of via the building manager (Department of Physics). Contact the building manager who will store them in the yellow cabinet near the loading bay. **All chemical waste must be stored in a suitable container, correctly labelled with the contents and have contact details of the individual or group.** A chemical disposal company is contacted periodically to empty the cabinet.

Any hazardous materials which have been disposed should be removed from the LabCup database.

Clinical waste, including sharps bins, can be placed in the large yellow clinical waste bins located on the third and basement floors of Schuster. These are collected periodically by the waste contractor and sent for incineration.

Contact:

- 1) The BioPhysics Technician for the 3<sup>rd</sup> Floor clinical waste or
- 2) House Services for the basement clinical waste bin, when the bin is 2/3 full.

Sharps (includes needles, scalpel blades, razors, etc.) and broken glass should be placed in yellow sharps bins, these can be bought from Stores. See above for disposal. They **MUST NOT** be placed into any other waste bins/bags. Never overfill sharps bins, they should be permanently closed once the fill line has been reached.

Unwanted and empty gas cylinders should be returned to Stores, where they will arrange for collection.

Metal, swarf and offcuts can be placed in the large metal skip outside of the mechanical workshop.

## 4.7. Laboratory and Workshop Equipment

Work equipment is any machinery, appliance, apparatus, tool or installation for use at work (whether exclusively or not). All equipment used in the workplace must be suitable for the task in hand and sufficiently risk assessed prior to use.

Academic Supervisors and Line Managers are responsible for ensuring the safe operation of this equipment. This must include, but is not limited to, the following:

- Suitable and sufficient risk assessments must be in place and be easily accessible near the equipment
- Risk assessments must include routine and non-routine maintenance
- Users must be trained and supervised until fully competent
- Refresher training should take place at appropriate intervals
- Up-to-date training records must be kept
- Access to equipment should be restricted effectively, if identified in the risk assessment (e.g. isolate power)
- Clear warning signage must be displayed
- **Protective and emergency devices (e.g. machine guards, interlock, emergency stop) must be checked regularly and all records kept**
- Pre-use checks should be carried out before each use
- Users must not modify equipment (including protective and emergency devices).
- **Suitable maintenance programmes (in-house or external) must be in place and all records kept**
- Procedure for fault reporting and repair work must be in place.

If modification to the equipment is required to fulfil research needs, it must be risk assessed properly and additional control measures implemented.

The School Safety Advisor (Department of Physics) must be notified of the planned modification as soon as possible. The Modification must be authorised by Academic Supervisor or Line Manager.

The University's guidance on Equipment can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/equipment/>

### 4.7.1. Machinery Equipment (workshops)

In addition to the requirements for Laboratory and Workshop Equipment all machinery equipment must fulfil the following below:

- Follow the local rules for that area.
- Have suitable guards which protect the user from dangerous parts.
- Make sure the guards allow the machine to be cleaned and maintained safely.
- Where guard cannot give full protection, the use of jigs, holders, push sticks should be considered.
- Only be accessible to those competent to use them.

- Be isolated and locked out when not in use.
- The level of instruction and/or training required for users of machinery equipment must be proportional to the hazards.
- The manager or academic supervisor of this area must ensure that any task undertaken which involves machinery equipment under their control is done in a safe manner, following safe working practices and only undertaken by competent persons. **There needs to be a specific risk assessment and safe operating procedure for each piece of equipment.**
- Line manager or academic supervisor must be suitably satisfied of an individual's competence prior to allowing them to work unsupervised.
- **Protective and emergency devices should be provided, such as guards, interlocks, emergency stops etc. and must not be removed, by-passed or interfered with under any circumstances.** The Department may choose to implement disciplinary procedures should staff or students interfere with equipment which could render it dangerous.
- Be suitably maintained with any defects reported to the Responsible Person.
- Purchase only equipment in accordance with the requirements of the Supply of Machinery (Safety) Regulations 2008.
- **Ensure maintenance operations are carried out safely.**
- Equipment is stable and that suitable and sufficient lighting is provided.
- Ensure that equipment has appropriate clear, visible or audible warning, devices, notices and markings.

#### **4.7.2. Training**

Training needs are likely to be greatest on recruitment. But training is also required:

- If the risk to which people are exposed change due to a change in their working tasks.
- Because new technology or equipment is introduced.
- If the system of work changes.

Refresher training should be provided when necessary. This may be due to a statutory requirement, due to lapse in skills, if bad practices have been witnessed, or it may be identified after an accident, refurbishment and reoccupation of the workshop or due to a merger of workshops.

Skills decline if they are not used regularly. For example, you would want to check if refresher training is needed after a lengthy absence from work or if a worker is moved onto a work process that has changed since they last performed those tasks. Particular attention should be paid to people who deputise for others infrequently, as they may need more frequent refresher training than those who do the job regularly.

#### **4.7.3. Guards**

All guards and protection must:

- Be suitable for the purpose for which they are intended.
- Be of good construction, sound material and adequate strength.

- Be maintained in an efficient state, in efficient working order and in good repair.
- Not give rise to any increased risk to health and safety.
- Not be easily bypassed or disabled.
- Be situated at a sufficient distance from the danger zone.
- Where necessary not unduly restrict the view of the operating cycle of the machinery.
- Be constructed so that they allow maintenance and part replacement to be carried out whilst restricting access to the specific work area if possible without having to dismantle the guard or protection device.

Further University guidance can be found at the link below:

<http://documents.manchester.ac.uk/display.aspx?DocID=15588>

#### **4.8. Laboratory refrigerators and freezers**

Laboratory refrigerators and freezers are for the storage of research materials only and must not be used for the storage of food or drink intended for human consumption. Unless a refrigerator or freezer is labelled as flame or spark proof it must not be used for the storage of flammable or explosive substances; peroxides are especially dangerous. All refrigerators and freezers for storage of flammable substances must be purchased as spark proof. All flammables should be stored within secondary containment within the fridge or freezer to minimise the risk of a flammable atmosphere building up. They should then be opened safely in a fume hood.

#### **4.9. Laundry Service**

The Physics Stores located on the ground floor of Schuster offers a laundry service for lab coats. See Physics Stores for more details. The workshop manager is responsible for the laundry service of overalls and lab coats within the workshop.

#### **4.10. Legionella**

Legionella is a potentially fatal form of pneumonia, usually contracted by inhaling water droplets containing the bacterium *Legionella pneumophila*. The Department has a variety of equipment which uses and/or stores water and some may represent a Legionella risk. In order to meet the required standards, the Department must have suitable and sufficient controls in place to eliminate the risks associated with this potentially fatal disease, or to reduce the risk to an acceptable level.

Everyone is susceptible to infection but some people are at higher risk, including:

- Those over 45
- Smokers and heavy drinkers
- People with underlying respiratory, kidney, lung or heart disease
- Those with diabetes

- Those with an impaired immune system

The following conditions increase the risk of Legionella:

- Water stored and/or re-circulated
- Water temperature kept between 20–45 °C, which supports bacteria growth
- Deposits or contaminants such as rust, sludge, scale, organic matter and biofilms that could support bacterial growth
- If water droplets are produced and released

Communal taps and showers in buildings are regularly flushed and cleaned by building attendants. Extensive cleaning is arranged periodically by Estates.

Equipment and systems that may represent a foreseeable risk in the Department include (this list is not exhaustive or definitive):

- Water baths
- Chilled water baths
- Recirculating water vacuum systems
- Carbon dioxide incubators which hold a tray of water in the base to maintain humidity
- Rotary evaporators
- Ultrasonic baths
- Coolant used with lathes and machine tools
- Plumbed in taps (throughout labs, kitchens and in fume hoods)

To minimise the risk of legionella, these systems should be cleaned regularly, with changing of water and addition of biocide or disinfectant. Taps should be flushed weekly for a minimum of 2 minutes. Flushing records must also be kept. The risk of legionella and the controls needed should be added to the risk assessment.

Please refer to:

[FSE Water Systems – Cleaning Guidance to Mitigate Legionella](#)

[Weekly water taps recording sheet](#)

The University's guidance on Legionella can be found below:

<http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=15545>

## **4.11. Laser Safety in Physics**

The safe use and management of lasers by University staff, students and visitors is outlined in the University Arrangements Chapter 27 - Laser Safety, which must be followed.

Your LLSA for Physics is Prof Darren Graham, E-mail: [Darren.Graham@manchester.ac.uk](mailto:Darren.Graham@manchester.ac.uk)

### **4.11.1. Laser Classification**

Laser classification is your first indicator of the hazard associated with a laser. The classification standard you should take note of on your laser is the international standard set

by the International Electrotechnical Commission (IEC), and known as IEC 60825 (previously IEC 825). Within Europe this standard has been adopted as a European Normative standard known as EN 60825, and the British Standards version known as BS EN 60825. **Ignore the CDRH (Center for Devices and Radiological Health) standard, which is solely for the USA as they never adopted the international standard.** Lasers labelled Class I, II, IIIa, IIIb, or IV are indicating the CDRH classification and these do not directly translate to the IEC classification which are labelled Class 1, 1C, 1M, 2, 2M, 3R, 3B and 4. If you are in any doubt about the class of laser you have contact your Local Laser Safety Advisor (LLSA).

### Overview of the different laser classifications

- Class 1, 1C, 1M lasers are safe to the naked eye. Class 1M is only safe provided it is **not** viewed with a Magnifier (telescope, microscope, magnifying glass etc.).
- Class 2, 2M lasers require the eye's blink reflex to limit exposure to a safe level. You must however blink. Be aware that alcohol and certain drugs can hinder the blink reflex. **Do not stare into the beam.** Class 2M is only safe provided it is **not** viewed with a Magnifier (telescope, microscope, magnifying glass etc.).
- Class 3R, 3B lasers present a hazard from direct exposure to the beam. You must prevent direct exposure to the beam. Class 3B is very hazardous to the human eye and at the highest powers in this class can be harmful to the skin. **Your eye must be protected from a Class 3B laser beam.**
- Class 4 lasers are hazardous to the eyes and skin from both direct and scattered radiation. **Your eyes and skin must be protected from the light from a Class 4 laser.**

The Laser Safety Training course (THS42 or THS42e) can be booked through the training catalogue <https://app.manchester.ac.uk/training/profile.aspx?unitid=2330&parentId=4>.

Existing laser users are reminded that they should attend a refresher Laser Safety Training course once every 5 years.

Although systems which fully enclosed or interlock Class 3B and 4 lasers are normally safe (e.g. Raman spectrometers) they should still be registered with the Local Laser Safety Advisor who will advise on whether any additional precautions are necessary.

#### 4.11.2. The use of laser pointers

Laser pointers must be labelled according to the IEC standard as Class 2 and carry a CE mark. It is acceptable for the labelling to appear on a datasheet accompanying the laser when the laser is too small for the labels to be directly attached. If your laser pointer does not have this labelling on it or on an accompanying datasheet then it must not be used in lectures or presentations.

The document [Guidance on the use of laser pointers](#) provides further information and instructions on the use of pointers within the School.

#### **4.11.3. Purchasing lasers or a change in use/location**

The Local Laser Safety Advisor (LLSA) must be consulted before the procurement, or change in use/location, of any Class 3B or 4 laser equipment. The written permission of the LLSA must also be obtained prior to any Class 3B or 4 laser being brought into the Department. Permission can be by e-mail.

Caution when buying laser diodes - When buying laser diodes from some companies the diodes may be sold to you as a laser 'component' and not classified. You are advised not to purchase such laser diodes. If you do then when you plug it into a laser diode power supply you become the laser manufacturer and accept the legal responsibility for correctly classifying it. This is not trivial and has serious consequences if you get it wrong. For advice on classifying a laser speak to your LLSA.

#### **4.11.4. Laser Installation and Service Visits**

If an outside agency (e.g., the laser equipment supplier) is engaged to install or service any laser equipment, then a permit-to-work procedure must be adopted for handing the equipment over to the service engineer and accepting it back fully-restored to normal operation when the work is completed.

The following [Laser permit to work](#) form must be completed and signed by the School Safety Advisor or by another member of the School's Health and Safety Committee before any work is undertaken.

#### **4.11.5. Risk assessments**

While a risk assessment and a set of local rules should be prepared for all laser activities, people developing activities involving the use of a Class 3B or 4 laser must submit copies of these documents to the LLSA for review. Remember the LLSA is there to assist PIs and users with the preparation of risk assessments. Maximum Permissible Exposure (MPE) and Exposure Limit Value (ELV) calculations for the eyes and skin must be included in risk assessments covering open beam work with Class 3B and 4 lasers in order to demonstrate that measures are in place to reduce user exposure below the MPE/ELV limits.

#### **4.11.6. Personal Protective Equipment (PPE) – Laser safety eyewear**

Laser safety eyewear should only be considered when it is not reasonably practicable to provide protection by other means (i.e. you cannot fully enclose the laser system). Where PPE is required then the laser risk assessment must include the calculations performed to determine the required eyewear and your LLSA must approve the choice of eyewear. When PPE is required then it must be worn. Protective eyewear is designed to protect against accidental exposure to laser radiation. It should not be used to protect against deliberate exposure or the intentional viewing of a laser beam.

Eyewear must:

- cover the wavelength range of the laser;
- be labelled for the laser type

'D'=continuous wave, 'I'= long pulse (1 ms to 250 ms), 'R'=Q-switched, short pulse (1 ns to 1 ms), 'M'=pico- and femto-second lasers (<1 ns);

- have a sufficient 'LB' rating (a scale number indicating the ability to reduce eye exposure and resistance to laser damage);
- be CE marked;
- be in good condition (i.e. no scratches or cracks).

Eyewear 'only' displaying the optical density (OD) numbers should not be used. OD is not enough to specify safe eyewear as it does not account for resistance to laser damage.

#### **4.11.7. Useful videos**

[Laser Safety - Controlled Areas](#)

[Laser Safety - Alignment](#)

[Laser Safety - Eyewear and Filters](#)

[Laser Safety - Classification](#)

#### **4.11.8. Accidents and Near-miss events**

Laser users must understand that if they suspect they have been struck in the eye by a laser beam or have any immediate concerns over their eyesight they should go to A&E as a matter of urgency. In emergencies the LLSA or a member of staff should assist and ensure a copy of the risk assessment is taken. The assessment will contain information that can help in diagnosis and treatment.

All laser incidents and near-miss events must be reported following the procedures given on the front page of StaffNet ([www.staffnet.manchester.ac.uk/](http://www.staffnet.manchester.ac.uk/) see 'Top Forms') and also at [www.healthandsafety.manchester.ac.uk/](http://www.healthandsafety.manchester.ac.uk/)

Further guidance on the University's policies on laser use can be found here:

<http://www.radiationsafety.manchester.ac.uk/lasers/>

## **4.12. Lift and Crane Equipment**

Equipment used for carrying out lifting operations in the Department includes:

- Overhead gantry cranes
- Vacuum lifting cranes
- Hoists
- Scissor lifts
- Pallet trucks
- Work tables
- Lifting accessories, e.g. slings, hooks, shackles, eyebolts, clamps

All lifting equipment and accessories are subjected to statutory thorough examinations. These must take place every 6 months or 12 months, depending on the equipment and their



intended usage. This is arranged by the I&F Technical Operations Manager and carried out by qualified engineers from our insurance provider, Allianz. You must notify the I&F Technical Operations Manager and School Safety Advisor (Department of Physics) before purchasing lifting items and they must be added to the Department's inventory and Department's insurance list. At JBO, the Site Safety Advisor holds copies of the inspection certificates.

All personnel involved in lifting activities must be trained and qualified by completing the Learning and Organisational Development Slings Safely training courses. Refresher training should take place at least every 5 years.

All lifting equipment must be locked away when not in use and out of reach of unauthorised users.

Please also see specific guidance for using JCBs and Cherry Pickers at JBO in Section 6.

#### 4.12.1. Training courses

Novice: <https://app.manchester.ac.uk/training/profile.aspx?unitid=6536&parentId=4>

Experienced/Refresher:

<https://app.manchester.ac.uk/training/profile.aspx?unitid=6538&parentId=4>

A risk assessment must be in place prior to using the equipment. A detailed *Lift Plan* must be in place when lifting or transporting large items. **NEVER** lend lifting equipment to untrained personnel.

Allianz issue an inspection report for all items tested, with an associated defect code. The reports and actions are managed by the I&F Technical Operations Manager. Items with an:

- A Defect must be taken out of use immediately and once amended tested by a qualified insurance engineer **before use**.
- B Defect must be rectified as soon as possible.
- C defects should be rectified as soon as possible but at least by the next inspections date
- Plant Not Available (PNA), **MUST NOT** be used until inspected by a qualified insurance engineer.

**NEVER USE** equipment outside of its testing date. Contact the I&F Technical Operations Manager to arrange for testing before use.

#### 4.12.2. Schuster imposed loads

The imposed loading on Schuster floors should **NOT EXCEED** 150 lbs per sq.ft (226 kg per m<sup>2</sup>) **NOR TO EXCEED** 80 lbs per sq.ft (36 kg per 0.30 m<sup>2</sup>) within 4'0" (1.22 m) of any partition.

The sum of vertical loads hung from the channel inserts in the underside of any floor beam is **NOT TO EXCEED** 1,200 lbs (544 kg).

The horizontal load imposed on the channel inserts in the columns is **NOT TO EXCEED** 250 lbs (113 kg) per insert.

The horizontal load imposed on the channel inserts fixed to the walls is **NOT TO EXCEED** 150 lbs per foot run (226 kg per m).

The University's guidance on Lifting Operations can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/equipment/lifting/>

#### **4.13. Local Exhaust Ventilation (LEV)**

LEV includes any engineering control system installed to reduce exposures to airborne contaminants such as dust, mist, fume, vapour or gas in a workplace. It includes:

- fume cupboards/hoods
- full/partial enclosures such as welding bays
- capture hoods
- soldering units
- multi-point ducting extract systems
- downdraught tables (if used to control exposure to hazardous substances)
- Nederman-type flexible receiving hoods and their extract systems
- spray booths

All LEVs require a statutory thorough inspection and testing every 14 months. This is arranged by the I&F Technical Operations Manager and carried out by qualified engineers from Allianz.

Three systems have been identified at Jodrell Bank:

- Welding bay in Telescope Workshop
- Welding bay in Mechanical Workshop
- Etch tanks in P.C.B. room (room closed and no longer in use)

These should be tested by the University's approved insurance inspection company to establish flow rates and extraction efficiency, but it is the responsibility of individual users to ensure that the fans are working and appropriate for their particular application. Any problem arising from the use of the existing systems, or proposals for the installation of additional systems should be addressed to the I&F TOM.

All ducted local exhaust ventilation associated with roof fans in the Schuster building switches off in the event of a fire and during the weekly fire alarm tests. Therefore, **there is no extraction during a fire alarm**. Users of ducted fume hoods should lower the sash and leave the area immediately. All ducted LEV users should plan their work to ensure they are not working with hazardous materials during the weekly fire alarm test on Wednesdays at 9:15 am.

All multi-point ducting systems in Schuster **MUST HAVE 10% of the ducts closed** to ensure adequate extraction.

Monthly checks are carried out and recorded by the I&F technical team using calibrated anemometers. Calibrated anemometers may be borrowed on request from the I&F team.

Users of the LEVs must be trained and supervised until fully competent. [Pre-use checks](#) must be carried out before each use:

- LEV must have a valid inspection date
- Air flow indicator must show adequate air flow
- Sash height or opening must be kept to a minimum, and must never exceed the maximum level indicated on the equipment
- Items should be no closer than 150 (6 inches) to the front of a sash
- Working space must be kept as free as possible, and not be used as a storage area
- Working space must not contain any contaminants, incompatible materials or incompatible activities

Capture distances for soldering units and extraction arms must be stated within the risk assessment and must be used within this distance to ensure the contaminant is contained, **NEVER** use an extraction arm above your breathing zone as this will increase your exposure.

If a fault occurs, or if thorough examination is out of date, work must stop immediately and the fault reported to of the I&F Technical Operations Manager, Building Manager or Safety Advisor. Notices must be displayed on the equipment and all users informed.

*NB: Air movement does not mean the airflow has reached an adequate level to create sufficient extraction. Airflow can only be checked properly by appropriate equipment, such as an anemometer, not by a piece of paper blowing at the LEV. Checks must be carried out by a trained and competent person.*

*NB: Microbiological cabinets or biological safety cabinets, and cabinets providing protection from environmental contamination only (e.g. laminar flow cabinets) are not tested by Allianz, Departments are responsible for ensuring these are serviced and inspected at least every 14 months by qualified engineers.*

Example risk assessment for [fume hoods, extraction arms](#) and [soldering units](#) are available on the Physics intranet and caused as a starting point for your own assessment.

Pre-use fume hood checks can be found on the Physics intranet under the forms section.

The University's guidance on LEV can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/chemicals/lev/>

#### **4.14. Nanomaterials (including graphene)**

The term “nanomaterial” has been defined by the European Commission as a natural, incidental or manufactured material containing particles in an unbound state or as an aggregate or agglomerate and where 50% or more of the particles have one or more external dimension in the size range 1-100 nm. Nanomaterials have a wide range of chemical compositions and come in many different shapes, including fibres, objects, particulates, plates, tubes, dots, wires and powders.

It is generally agreed that current knowledge regarding the toxicity of particulate nanomaterials is incomplete and current safety data sheets may not contain all the required safety information. Therefore, a precautionary approach must be applied when carrying out a risk assessment.

Academic Supervisors and Line Managers must ensure users of nanomaterials:

- Complete a pre-employment questionnaire with Occupational Health and have a valid fitness to work certificate before they start work.
- Participate in a health surveillance check if risk assessment identifies the need.
- Carry out suitable and sufficient risk assessments.
- Are trained and supervised until competent, with training records kept locally

The use of graphene is strictly prohibited in Schuster and Alan Turing.

The University's guidance on Nanomaterials can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=15497>

## **4.15. Non-Ionising Radiation**

Non-ionising radiation (NIR) is the term used to describe the part of the electromagnetic spectrum covering two main regions, namely optical radiation (ultraviolet (UV), visible and infrared) and electromagnetic fields (EMFs) (power frequencies, microwaves and radio frequencies).

The Department has various sources of NIR in the form of cryostats (see [cryostats](#) sections), mercury lamps, welding activities, high powered LEV's, UV lasers (see [laser](#) section), and microwaves (including domestic ovens). Other sources may include but are not limited to, transilluminators, sterilising equipment, TLC viewing cabinets, cadmium lamps, hand held UV lamps, ozone generators, housed UV sources (e.g. in microscopes), phospholuminescence equipment and fly killing tubes (insectocutors).

### **4.15.1. Microwave ovens**

The safe limit for leakage is 5 mW/cm<sup>2</sup>. Any oven with a defective or loose seal or door grid should be reported to the School Safety Advisor (Department of Physics), who will arrange for testing with the Radiation Safety Unit (RSU).

All microwave ovens, whether used in laboratories, workshops or cleanrooms, should be registered with the Radiation Safety Unit. Contact your School Safety Advisor (Department of Physics) with the following information: **Location, Model, Serial Number, Person responsible for the oven**, who will add the oven to the Department Inventory.

### **4.15.2. UV sources**

UV light is harmful to skin and eyes. There are both short term effects (serious damage to the cornea (photokeratitis) and to the skin (erythema)) and long term effects (skin aging, cataracts and cancers). Different wavelengths of UV light and intensity of source output considerably

alter the time required before serious injury occurs. All UV light exposure should be kept to a minimum. A few seconds exposure may be sufficient to cause serious eye damage which may not be felt for several hours and may also be very painful.

[A safety awareness course](#) for UV sources is mandatory for all users of UV equipment on and off campus.

All UV emitting equipment (100-400 nm) or that which is suspected to fall in this range **MUST** be registered with the Radiation Safety Unit. Please contact your School Safety Advisor (Department of Physics) who will add the item to the Department UV inventory.

Warning signs must be clearly visible on the equipment and, where necessary, the lab door/wall.

Prevention of exposure during use of UV light requires the use of a full face shield that complies with the requirements of BS EN170:2002 and is appropriately CE marked. Ordinary laboratory splash spectacles do not absorb UV and should never be used to protect the eyes during UV exposure.

#### **4.15.3. Visors**

**Visors must be purchased from RSU.** The Radiation Safety Unit labels all face shields that are suitable to protect against UV 'FOR UV PROTECTION' and are engraved with an identification number and the date of issue. Those that are **NOT LABELLED are NOT SUITABLE** and must not be used.

#### **4.15.4. Electromagnetic fields**

Restrictions on the effects of exposure to EMFs are based upon established health effects and are termed basic restrictions. Depending on the frequency, the physical quantities used to specify the basic restrictions to occupational exposure are as follows:

Between 1 Hz and 10 MHz, basic restrictions are provided on Current density to prevent effects on nervous system functions.

Between 100 kHz and 10 GHz, basic restrictions on Specific Absorption Rate (SAR) are provided. This quantity is a measure of how much heat is deposited in body tissues. SAR levels are applied to prevent whole body heat stress and prevent excessive localised tissue heating, at 0.4 W/kg and 10 W/kg respectively.

In the 100kHz-10 MHz range, restrictions are provided on both Current density at  $f/100$  ( $f$  in kHz) and SAR as above.

Between 10 and 300 GHz, basic restrictions are provided on Power density to prevent excessive heating in tissue at or near the body surface. This is restricted to 100 W/m<sup>2</sup>.

Those working near magnetic fields, may arrange for a survey especially if they have any health concerns regarding their exposure. For static magnetic fields, occupational exposure should not exceed the time weighted average for 8 hours of 200 mT. Occupational whole-body exposure should not exceed a magnetic flux density ceiling value of 2 T. For limbs only, exposures of 5 T can be permitted.

**Those fitted with a cardiac pacemaker or ferromagnetic implants should be aware that magnetic fields may not be protected by these limits. The majority of cardiac pacemakers are unlikely to be affected by fields <0.5 mT. Above this threshold, such locations should be avoided.**

**Areas with magnetic flux densities >3 mT should specify with a warning sign to prevent movement or dislodgement of ferromagnetic implants, or hazards from flying metal objects.**

#### **4.16. Noise**

Noise can be described as unwanted sound. Sounds and noise are an important part of everyday life; however, at high levels, they can cause health and hearing problems. Occupational noise can cause permanent or disabling hearing damage to individuals. Hearing loss may be a gradual process because of exposure to noise over time, or, instantaneously due to sudden, extreme loud noises.

All equipment and activities that produce noise must be risk assessed. Academic Supervisors and Line Managers must implement appropriate control measures to minimise the noise level in a work area. Lower noise level equipment should be the preferred option during the procurement process.

Any exposure above 80 decibels requires additional risk assessments and control measures and may be in excess of acceptable limits. The level at which managers, supervisors and principal investigators must further assess the risk to staff and students' health and provide them with information and training is 80 decibels (dB).

The level at which managers, supervisors and principal investigators must provide hearing protection and **hearing protection zones** is 85 dB (daily or weekly average exposure). There is an exposure limit value of 87 dB, taking account of any reduction in exposure provided by hearing protection, above which staff and students **MUST NOT** be exposed.

To determine [daily](#) and [weekly](#) noise exposure levels use the [HSE exposure calculators](#).

If it is suspected that noise levels may be in excess of 80 decibels, you must consult the School Safety Advisor (Department of Physics). An assessment of the risk must then be carried out and the exposure levels measured. Appropriate control measures must then be agreed with the School Safety Advisor (Department of Physics).

All staff and students regularly exposed to noise levels above 85 decibels must undergo hearing checks (audiometry) and health surveillance with Occupational Health.

The University's guidance on Noise can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=15619>

#### 4.17. Open plan and shared laboratories

There is a requirement for the Department to ensure that there is adequate co-operation, co-ordination and communication between those sharing a workplace to ensure that everyone is sufficiently informed about all the risks present.

To ensure that lab personnel are made adequately aware of the changing nature of risk and to maintain acceptable standards of health and safety, it is advisable that there should be a “champion” e.g. senior/ lead academic or equivalent who has sufficient management authority to ensure that adequate cooperation, coordination and communication takes place between neighbouring research groups. The nominated person should have good links with the Department health,safety and wellbeing committee.

Further University guidance can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=12903>

#### 4.18. Overnight and long term running of equipment

Any equipment left to run unsupervised overnight or for longer periods must have sufficient information posted on it to ensure methods to make safe equipment in an emergency, and contact details of the operator. Permission to run equipment overnight or for longer periods should be sought **BEFORE** it is left to operate from an academic supervisor or line manager of the area. A risk assessment must also be in place to specify control measures for leaving the equipment running out of hours. This must be signed by the Academic Supervisor or Line Manager. Permission should only be granted only after the production and scrutiny of a suitable and sufficient risk assessment.

[Overnight Equipment Permit form](#) can be found on the Physics intranet

#### 4.19. Personal Protective Equipment (PPE)

PPE is the least effective method of controlling exposure to a hazard and engineering controls and safe systems of work should always be considered before PPE. In cases where PPE is relied upon heavily, health surveillance should be arranged with Occupational Health to ensure the risk of exposure is adequately controlled.

PPE is all equipment (including, but not limited to clothing) required to be worn or held by a person at work to protect them against the identified hazards in their workplace. All equipment must conform to British Standards (shown by a BS EN number) and be CE marked.

PPE is equipment that will protect the user against work-related hazards. PPE includes items such as safety helmets, gloves, eye protection, high-visibility clothing, safety footwear and safety harnesses. It also includes respiratory protective equipment (RPE).

If PPE is provided for use as a risk assessment control measure **it must be worn correctly**.

It is the responsibility of the Academic Supervisor or Line Manager to ensure users of PPE are trained in the safe use, handling and storage of PPE including maintenance, cleaning, pre use checks and disposal. Safety Advisors can provide advice and guidance.

The personal protective equipment selected must be appropriate for the risks involved, take account of ergonomic requirements, fit the wearer correctly, be compatible with any other PPE and not increase the overall risks (i.e. impede evacuation or operation). Where PPE is subject to statutory inspection and testing, records must be kept.

The use of **Respiratory Protective Equipment (RPE)** requires additional considerations prior to use such as how the work in question will affect other users within a space and if they too should use RPE.

RPE requires face fit testing prior to use along with suitable training. If you wear glasses, have a beard or even facial stubble, then RPE is not suitable and will not be effective. Positive pressure RPE mask may be considered.

The selection of RPE and any filters must be carefully considered as part of the selection process, a Safety Data sheet for the substance concerned will give guidance.

For these reasons and the unreliable nature of RPE the use of RPE is discouraged and other more suitable control measures must be fully exhausted first. The School Safety Advisor (Department of Physics) should be consulted in the planning stages of utilising RPE.

Commonly used PPE within the Department includes:

White lab coat	<ul style="list-style-type: none"> <li>• Mandatory in chemical labs and when identified in the risk assessment.</li> <li>• Should be flame-retardant cotton material</li> <li>• Should be fastened to be fully effective</li> <li>• Should be stored on coat hooks and laundered regularly.</li> </ul>
White Howie lab coat	<ul style="list-style-type: none"> <li>• Mandatory in all Biological labs</li> <li>• Howie-type high neck with elasticated cuffs</li> <li>• Should be flame-retardant cotton material</li> <li>• Should be fastened to be fully effective</li> <li>• Should be stored on coat hooks and laundered regularly.</li> </ul>
Workshop overalls or suitable lab coat	<ul style="list-style-type: none"> <li>• Mandatory in workshop areas</li> <li>• Should be flame-retardant cotton material</li> <li>• Should be fastened to be fully effective (lab coat)</li> <li>• Should be stored on coat hooks and laundered regularly (lab coat)</li> <li>• Should only be worn in the workshop. <b>Overalls/lab coats are not permitted outside of the workshop or in the mezzanine area and should NEVER be taken home.</b></li> </ul>
Safety Glasses	<ul style="list-style-type: none"> <li>• Mandatory when identified in the risk assessment (e.g. soldering, chemicals, gas cylinders, biological samples, workshops).</li> <li>• Chemical splash-proof with side shields and impact resistant</li> <li>• Conform to BS EN 166</li> </ul>



	<ul style="list-style-type: none"> <li>• Should be stored in designated glasses holder to be kept clean and free from damage</li> <li>• Any damage or scratches will diminish the level of protection. Therefore, equipment must be replaced if defective</li> <li>• Prescription safety glasses can be obtained. See section 4.20 for more details.</li> </ul>
Face Visor	<ul style="list-style-type: none"> <li>• Mandatory when full face protection is identified in the risk assessment (e.g. dispensing liquid nitrogen or using UV)</li> <li>• Conform to BS EN 166</li> <li>• Should be stored in designated safe place, to be kept clean and free from damage</li> <li>• Any damage or scratches will diminish the level of protection. Therefore, equipment must be replaced if defective.</li> </ul>
Gloves	<ul style="list-style-type: none"> <li>• Mandatory when skin protection is identified in the risk assessment</li> <li>• Gloves must be appropriate to the activity</li> <li>• Chemical resistant (BS EN 374)</li> <li>• Vary in material type and thickness</li> <li>• Must be correct for the chemicals used</li> <li>• Must be specified in risk assessment</li> <li>• Heat resistant (BS EN 407)</li> <li>• Cryogenic resistant (BS EN 511)</li> <li>• Cut resistant (BS EN 388)</li> <li>• Should be stored in a designated safe place, to be kept clean and free from damage</li> <li>• Any damage or tears will diminish the level of protection. Therefore, equipment must be replaced if defective.</li> </ul>
Ear defenders / plugs	<ul style="list-style-type: none"> <li>• Mandatory when hearing protection is identified in the risk assessment</li> <li>• Noise level should be measured as part of the risk assessment</li> <li>• Noise level must be lowered to below legal exposure limits</li> <li>• All personnel in the vicinity should be considered in the risk assessment and their protection specified</li> <li>• Equipment must conform to British Standards</li> <li>• Equipment must be stored in a designated safe place, to be kept clean and free from damage</li> <li>• Any damage will diminish the level of protection. Therefore, equipment must be replaced if defective.</li> </ul>
Respiratory Protective Equipment (RPE)	<ul style="list-style-type: none"> <li>• Should be a last resort and only be used if all other options of control measures (e.g. fume cupboard) cannot be implemented</li> <li>• Protection factor (FFP) and filter type must be correct for the hazardous substances used and conform to British Standards. Must be specified in the risk assessment</li> </ul>

	<ul style="list-style-type: none"> <li>• Must be face-fitted by a trained and competent person to ensure a tight seal around the user's face, thus achieving maximum protection</li> <li>• Due to bespoke face-fitting, RPE must be assigned to a designated person and not be worn by other individuals</li> <li>• All personnel in the vicinity should be considered in the risk assessment and their protection specified</li> <li>• Users must be trained and competent in the use and maintenance of their own RPE</li> <li>• Subject to monthly inspection</li> <li>• Subject to annual maintenance, test, refresher training and face-fit checks</li> <li>• Dust masks are <b>not suitable</b> for protection against hazardous chemicals, aerosols, gases, vapours or nanomaterials.</li> </ul>
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Further University Guidance can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/ppe/>

#### 4.20. Prescription Safety Glasses

If prescription safety glasses are required for regular work in a laboratory or workshop the Department must provide these free of charge.

Prescription glasses can be obtained from the vision centre in Carys Bannister Building, number 88 on the campus map.

- Either call in at reception or ring 0161 306 3860 to book an appointment. These take approximately 2 hours as the examination and fitting is used for teaching purposes.
- At your appointment you will receive an eye test followed by a fitting for your safety spectacles.
- Please bring the form for payment to your School Safety Advisor (Department of Physics) in G.51 or scan the form and send via email. Optometry will call you when your prescription spectacles are ready.

#### 4.21. Pressure Systems

This includes any pressure system which exceeds 0.5 bar, it must be registered on the insurance list if it is over 250 Bar/L.

Pressure systems and equipment in the University include:

- Boilers and steam heating systems
- Pressurised process plant and piping
- Compressed air systems (fixed and portable)
- Pressure cookers, autoclaves and retorts

- Heat exchangers and refrigeration plant
- Pressure valves, steam traps and filters
- Pipework and hoses
- Pressure gauges and level indicators

Designers, manufacturers, suppliers, installers, users and owners all have duties to manage the risks of:

- Impact from the blast of an explosion or release of compressed liquid or gas
- Impact from parts of equipment that fail or any flying debris
- Contact with the released liquid or gas, such as steam
- Fire resulting from the escape of flammable liquids or gases

Within the Department the I&F Technical Operations Manager should keep an inventory of all pressure vessels to ensure they are suitably inspected by the University's insurer and maintained effectively.

People involved in any part of this process must ensure the systems or equipment are correctly designed, constructed and installed. Protective devices must be in place to allow the safe release of pressure and minimise the risk of explosion. A thorough written scheme of examination (WSE) must be carried out and certified by a competent person **before work can commence**.

All pressure systems are subjected to statutory examination every 14 months, by qualified engineers from Allianz.

Users must not modify any pressure systems unless the I&F Technical Operations Manager has been consulted, and the work approved by the Academic Supervisor or Line Manager. Systems that are modified by the Department must prepare a technical file to demonstrate compliance to EU legislations, with all the safety requirements specified.

The Academic Supervisor and Line Manager are responsible for ensuring the safe operation must ensure that any users are suitably trained and instructed to do so. Risk assessments must be in place before the use of any pressure system.

Pressure systems not required to be inspected by the University insurer should be listed on the Asset register of LabCup. The pressure release value (PRV) should also be listed along with the date that this expires.

Details on this procedure can be found on the Physics intranet [LabCup page](#).

The University's guidance on Pressure Systems can be found below:

[http://www.healthandsafety.manchester.ac.uk/toolkits/equipment/pressure\\_systems/](http://www.healthandsafety.manchester.ac.uk/toolkits/equipment/pressure_systems/)

#### **4.21.1. Gas Cylinder Safety**

The use of Gas Cylinders is restricted to those who have been trained or instructed to do so.

To operate a cylinder e.g. turning on and off, checking gauges etc. local instruction is required, this. training on use of gas cylinders can be done in-house by a competent person.

[Competency records](#) of this training should be kept.

To install, move or maintain Gas Cylinders including regulators, **all persons must have attended [TLCA105 Compressed Gases Workshop](#)** provided by Learning and Organisational Development.

The correct PPE must be provided for moving gas cylinders, which includes safety shoes and gripper gloves. All personnel must wear safety glasses when using gas cylinders and if flammable gases are being used a flame retardant laboratory coat must also be worn.

Only transport cylinders in the **goods lift** with the lift locked out. The user must then travel in a separate lift or use the stairs to meet the vessel. **NEVER** transport cylinders with people in the lift.

Positioning of gas cylinders within a laboratory should be risk assessed to ensure they are a suitable distance from incompatible materials, do not cause an obstruction and are suitably secure. Flammable and oxidant gases will increase the risk of fire. Gas cylinders must be clamped to a sturdy bench, chained to a wall or bench or in an appropriate secure cylinder stand when in use. **NEVER USE** a gas cylinder with the regulator attached in a trolley, as this is unsecure. If the cylinder was to fall the neck of the cylinder would break and cause the gas cylinder to project at high speeds across the room.

The School Safety Advisor (Department of Physics) should be informed of any toxic, flammable or oxidising gas cylinder to ensure the adequate controls are in place.

**NEVER USE** a gas cylinder or regulator which is damaged or out of date. Regulators typically need replacing every 5 years, this should be considered as a cost in research grants. Your School Safety Advisor (Department of Physics) has a list of gas specialists who can offer advice on the correct type of regulator.

Gas cylinders should be listed on LabCup under the chemical inventory section. Regulators should be listed on the Asset register of LabCup, with the date that this expires.

Details on this procedure can be found on the Physics intranet [LabCup page](#).

Gas cylinders are subject to their own statutory inspections, typically every 10 years. **DO NOT** use cylinders outside of this test date, these require sending back to the manufacturer for testing, this test date can be found on the neck of the gas cylinder.

Gases must only be used in a well-ventilated area or areas fitted with gas sensors, oxygen depletion sensors and alarms. Quantity of gases must be kept to a minimum. Replacement cylinders typically arrive in 2 days in Stores so spare cylinders should not be required for most processes.

It is the responsibility of the academic supervisor or line manager to ensure the suitable controls measures are in place **BEFORE** the gas cylinder is ordered. The University limit for oxygen depletion is 19.5%. If a full release of gas would reduce the oxygen level to below this

point then an oxygen depletion monitor must be installed. The release of a gas can cause dizziness, potential loss of consciousness, severe brain damage, and even death. Other toxic gases such as carbon monoxide and hydrogen sulphide may cause severe health damage, and even death. Toxic gases typically have low levels of detection and usually a relevant gas monitor for that substance will be required even if a full release does not reduce oxygen levels to below 19.5%. For example, the University limit for CO<sub>2</sub> levels is 0.5% so even if the oxygen levels are calculated above 19.5% limit you will still need a CO<sub>2</sub> monitor if the CO<sub>2</sub> level is calculated at above 0.5% for CO<sub>2</sub>. Before ordering a toxic gas, please seek advice from your School Safety Advisor (Department of Physics). If a monitor is required then the I&F Technical Operation Manager will need to be consulted.

Physics Stores maintain a stock of commonly used gas cylinders. Contact them for more details. When the gas cylinder is empty it must be taken back to Stores as soon as possible. Let Stores know and they will arrange collection.

Risk assessments must be in place before use. The Physics H&S intranet pages contain an example risk assessments for [compressed gas](#) for use as a *starting point* for your own assessments. It must be modified to your own work. All gases must have an appropriate CRA form.

Gas calculations should form part of the risk assessment, to determine if oxygen depletion will reach a critical level in the event of an accidental release or equipment failure. **Calculations must include all gases used in a single area.**

**Gas lecture bottles:** These should be stored upright at all times and placed on LabCup along with their expiry date. If they contain a toxic gas, a monitor may be required, consult the safety advisor before purchasing.

Stores do not dispose of lecture bottles, as this can be expensive it is important to buy lecture bottles from a supplier who will collect the lecture bottle at then end once empty.

The University's guidance on Gas Monitors can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=15617>

#### **4.21.2. Acetylene**

The use of acetylene is currently prohibited in the Department on campus. Any approval of acetylene must come from University fire officers. Please contact your School Safety Advisor (Department of Physics) for more information.

There are acetylene cylinders at Jodrell Bank Observatory. The location of these cylinders can be found on the [Emergency shut off plan](#).

#### **4.21.3. Regulators**

Regulators should be inspected frequently for signs of corrosion or mechanical damage. Oil or grease should never be used to obtain a gas seal especially between the regulator and the cylinder head.

The recommended maximum lifetime for any regulator is 5 years from manufacture (even if unused) if used in conjunction with a non-corrosive gas. Toxic regulator such as for use with ammonia should be replaced every 2 years.

Regulators should carry the BSI kite mark and BS5741. Older or non-compliant gauges may not have captive dials/needles and may fail catastrophically.

Cylinder pressures have increased over the years. 230 bar is common and values of 300 bar are to be expected in the near future. Many older regulators are only rated to 200 bar and should not be used in conjunction with these high pressure cylinders.

Always ensure that the cylinder colour code, the cylinder contents and pressure label and the regulator match. Do not rely on the cylinder's colour alone. If the label is missing, illegible or differs from the colour code then the cylinder should be returned to the manufacturer.

Oils or lubricants **MUST NOT** be used when fitting regulators. The use of PTFE tape should also be minimised as it can contain low molecular weight residues which may present an explosion hazard with compressed oxygen. If leaks are apparent this probably indicates either defects, wear or that an incorrect regulator is being used.

Force should not be applied in an attempt to correct a poor seal as this may cause further damage. Other malfunctions such as wavering pressure readings, jammed spindles etc. represent a damaged regulator. Damaged regulators must be sent back to the manufacturer for repair.

The use of soapy water to detect leaks presents a corrosion hazard and is not permitted. A specifically designed product should be used instead, which most gas suppliers can supply.

Regulators along with their expiry dates should be listed on the Asset register section of LabCup. Details on this procedure can be found on the Physics intranet [LabCup page](#).

Also see the risk assessment for [acetylene cylinders and regulators](#).

#### **4.21.4. Emergency arrangements**

If a full release of gas were to occur emergency arrangements for this release **MUST BE** in place in the safety file. Every user of this area should be made aware of these emergency arrangements and how to act should a release occur. The Physics H&S intranet pages contain an example [emergency arrangements template](#) which can be adapted for your own usage.

#### **4.21.5. Gas Cylinder Manifolds**

The pressure relief valve (PRV) and manifold system must be replaced typically every 5 years by a qualified gas engineer. A test certificate must be acquired for insurance purposes. The associated costs should be considered in grant applications. **NEVER** use out of date manifolds.

The manifolds must be registered with the Department insurance providers. A written scheme of examination (WSE) must be in place **before use** and should be tested by a qualified insurance engineer at specific intervals specified in the WSE. Seek advice from the I&F Technical Operations Manager and School Safety Advisor (Department of Physics) before installing any manifold system as this will need to be registered as an Estates project.

All manifolds must be registered on the Department's inventory. All users must be trained and **must have attended [TLCA105 Compressed Gases Workshop](#) provided by Learning and Organisational Development**. Risk assessment must be in place before use. Any defects should be reported immediately and the manifold should not be used until fixed/replaced by a qualified gas specialist.

#### **4.21.6. Gas Alarms and Oxygen Depletion Sensors**

Detection systems are installed in areas where toxic gases or asphyxiant gases are used. These are programmed to alarm if toxic gas rises, or oxygen decreases, to a level that can harm human life (19.5% oxygen level is considered to be the safe working limit). The warning should be both audible (siren) and visual (flashing light).

**Schuster basement research corridor has oxygen depletion sensors throughout due to the large volume of gases from the helium recovery system within the sub-basement, if all sensors are alarming in the basement research corridor, this is a serious leak, leave immediately and press the fire break glass to evacuate everyone from the building.**

Consideration should be sought from a competent gas specialist as to the amount of sensors and types required, this will depend on the density of the gas and also the size of the room. For example, where helium gas is present sensors will need to be installed at height, whereas argon gas will require sensors to be installed near the ground.

If the alarm activates, evacuate from the area immediately and contact the Responsible Person for that area. Ensure others cannot enter the area. **NEVER** enter a room that is alarming. **NEVER** try and rescue a person who has become asphyxiated in a room that is alarming. Ring fire service on 999, who have breathing apparatus, then ring security on 0161 306 9966.

The sensors and alarms are serviced by qualified contractors every 6 months. Contact the I&F Technical Operations Manager if you have acquired a portable gas monitor so it can be added to the service contract. Any fixed monitors must be installed by Estates.

#### **4.21.7. Cryogenic liquids**

The Department uses large amounts of liquid helium and liquid nitrogen; some applications require liquid argon. The liquid to gas ratio of liquid helium is ~739, liquid nitrogen is ~ 683 and liquid argon is ~ 824. For example, a 120 L release of liquid helium would occupy x 739 larger space = 88680 L of helium gas released into the room. A release of this size would rapidly displace the oxygen in the area. If the area is not adequately ventilated, this can result in asphyxiation and even death.

Vessels and Dewars must be stored in areas where oxygen depletion monitors are stored (if the calculation show the oxygen level would fall below 19.5% with a full release). Never leave cryogenic vessels and Dewars in corridors as they are unprotected here if a release were to occur and this would also jeopardise others emergency escape route.

Stores staff will fill your Dewar or vessel with liquid nitrogen. Once filled they leave these in the basement research corridor and email the users; please pick vessels up in a timely manner.

Liquid helium is obtained from the helium recovery unit in the basement. Liquid argon will need to be ordered from BOC.

Inhalation of the cold vapour can cause lung damage. Skin contact with the gas, or parts of equipment containing the gas, can cause severe cryogenic burns. Tissue damage is similar to frost-bite or thermal burns. Unprotected parts of the skin may stick to the low temperature surfaces, resulting in the flesh being torn away. Cold burns should be treated with tepid water for ~10 minutes and then covered in a burns dressing from a first aid box.

Pressure vessels over 250 Bar/L must be added to the insurance database, be examined by a qualified engineer and be issued a Written Scheme of Examination (WSE) **before use** and should be tested by a qualified insurance engineer at specific intervals specified in the WSE. Never use a vessel outside of its test date.

All pressure vessels should be added to the Department inventory, **regardless of size**. The pressure relief valves (PRV) on the vessels must be in date and should be changed every 5 years and come with a certificate of testing, which will be required for insurance purposes.

When acquiring vessels into the Department please inform the I&F Technical Operations Manager and School Safety Advisor (Department of Physics) so that the inventory can be updated and if needed the vessel can be added to the insurance list and a WSE can be obtained before use, this is a legal requirement.

If a pressure vessel is known to have been damaged, is icing up or excessively releasing gas, it must be taken out of service immediately, as this could be dangerous. Please contact the School Safety Advisor (Department of Physics).

Onion Dewars are fitted with loose fitting polystyrene lids as a safety device. Do not use an onion Dewar without a lid. Without a lid, ice plugs may form in the neck of onion Dewars when moisture comes into contact with the cold gas. The resulting ice plug may form a complete seal across the onion Dewar neck, preventing normal venting of gas, which would result in an explosion.

**Should an ice plug be found sealing the neck of an onion Dewar, evacuate the area immediately and ensure no one else can enter. Contact the emergency services and the School Safety Advisor (Department of Physics).**

All users must be trained and supervised until fully competent. **All users must have completed the [TLCA100 Cryogenic Gases E Learning](#)** provided by Learning and Organisational Development **BEFORE** they commence work. Training certificates must be kept in the safety files within the area. It is the responsibility of the academic supervisor or line manager to ensure that training has taken place before use.

Risk assessments must be in place before use. The Physics H&S intranet pages contain an example risk assessment for [cryogenic liquids](#) for use as a *starting point* for your own assessments. It must be modified to your own work. All cryogenic liquids must have an appropriate CRA form.



Pre-use checks must be carried out before each use, to ensure the equipment is in good condition and free from defects. All connections must be secure.

Clear signage must be displayed in areas with cryogenic liquids and all personnel in that area should be trained in the appropriate action in response to the gas alarms.

Personal Protective Equipment (PPE) as identified by the risk assessment **MUST** be worn, such as visors and gloves. Cryogenic gloves are essential when handling cryogenic liquids, there are different types of cryogenic gloves. Thick gloves can be used to hold cold pipes, whereas blue cryogenic gloves are used to protect from splashes of cryogenic liquids, they are not thick enough to protect from cold burns.

Only use designated cryogenic containers to store cryogenic liquids. A domestic vacuum flask must never be used, as they may explode.

Cryogenic liquids must only be transported in the goods lift. If using the lift, it must be locked out and users travel in a separate lift or use the stairs to meet the vessel. **NEVER** transport cryogenic liquids with people in the lift, this is a confined space and there is high risk asphyxiation.

The University's guidance on Cryogenic Materials can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=12840>

#### **4.21.8. Cryostats**

A cryostat is a device used to maintain low cryogenic temperatures of samples or devices mounted within the cryostat. Low temperatures may be maintained within a cryostat by using various refrigeration methods, most commonly using cryogenic fluid bath such as liquid helium. Hence it is usually assembled into a vessel, similar in construction to a vacuum flask or Dewar. *Please see section on pressure vessels and cryogenic liquids.*

The cryostats used within the Department typically have large magnetic fields, this can have serious health implications for people who have pacemakers, other heart conditions or ferrous implants, for this reason all areas containing cryostats with strong magnetic fields must be labelled accordingly with warning signs to ensure the safety of all personnel within the Department.

They must be registered on the Department inventory and the I&F Technical Operations Manager and School Safety Advisor (Department of Physics) should be informed before acquiring to ensure the correct positioning. **They must also be registered with the University Radiation Safety Unit (RSU).** The 5 Gauss line must be clearly marked on the floor around the cryostat to warn users of the danger. Metal objects can be attracted to the cryostat within this 5 Gauss line (However, the projectile zone is typically drawn at 30 to 50 Gauss). Therefore, care must be taken to ensure everyone's safety when working within these areas. The 5 Gauss line should not encroach into corridors or offices.

## 4.22. Radiological Safety

In the Department of Physics & Astronomy, **only** the Radiation Protection Supervisor, Dr Paul Campbell ([Paul.Campbell-3@manchester.ac.uk](mailto:Paul.Campbell-3@manchester.ac.uk) , phone 0161 275 4157, or Deputy Radiation Protection Supervisor, Dr Gavin Smith ([Gavin.Smith@manchester.ac.uk](mailto:Gavin.Smith@manchester.ac.uk) , phone 0161 275 4156), or the Head of Department, are permitted to:

- Acquire, transfer or dispose of radioactive materials (outside of exemptions outlined in the Environmental Permitting Regulations 2016).
- Directly access any High Activity Sealed Source, should these be present.
- Make alterations to the security arrangements.
- Authorise alterations to safety arrangements (interlocks, shielding, or containment).
- Designate areas for the use of radioactive materials (or remove designation).
- Authorise access to work in designated areas.
- Transport sources between designated areas.
- Authorise the use of x-ray producing equipment.
- Make alterations to the Local Rules.
- Sign and authorise Risk Assessments (concerning the use of radioactive materials).
- Authorise or certify individuals to be occupationally exposed to ionising radiation at sites outside of the university.

**All** other staff and students intending to use ionising radiation or those facing potential occupational exposure must:

- Attend the Radiation Safety Awareness Course run by the University Radiation Safety Unit ([details here](#)) or provide evidence of having attended previous (local) versions of this training or higher level training elsewhere. Registration to attend this course is achieved by written request (to the Radiation Protection Supervisor, [Paul.Campbell-3@manchester.ac.uk](mailto:Paul.Campbell-3@manchester.ac.uk), phone 0161 275 4157).
- If required, undergo local training given by the Radiation Protection Supervisor.
- Attend refresher training which should take place at least every 5 years (same course link as above).
- Read and sign the appropriate and current Local Rules and Radiation Risk Assessment and any other documents concerning non-radioactive hazards.

**All** work with radioactive material, as described in each Risk Assessment, can only take place given that there exists:

- Full contingency and response for events resulting in radioactive contamination, loss of containment or loss of radioactive material. In any such event the RPS and Head of Department must be immediately informed.

- **All** work involving the production of open radiation sources is confined to the 5<sup>th</sup> floor Radiochemical Laboratory, which is a Radiation Controlled Area. Access to this laboratory is restricted to authorised users only. Cleaners should not be permitted to enter or clean this area.
- **All** users of radiological materials and equipment must be trained and supervised until fully competent.

#### 4.23. Safety Signs





These are provided to warn people of risks where existing controls cannot completely remove a hazard. They are particularly useful on external doors to warn others in the building of the hazards contained within the area e.g. cleaner, Estates personnel and firefighters. When they are provided by the Department, they must comply with the appropriate legislation (Health and Safety (Safety Signs and Signals) Regulations 1996).



Apart from the normal fire exit signs within the corridors which are provided and maintained by the Estates Department, the Department also provides many other safety related signs. If a risk assessment identifies the need for other warning signs, speak to the School Safety Advisor (Department of Physics) who will ensure the correct signage is provided.

Signage should be clearly visible and free from obstructions. Any defects should be reported to the School Safety Advisor (Department of Physics).

All laboratories, workshops and clean rooms must display the following [door signage template](#) in order to inform who to contact in an emergency and also what hazards are present in these rooms, this should be reviewed regularly.

Different types of signage:

<p><b><u>Prohibition sign</u></b></p> <p>This prohibits a behaviour likely to increase or cause danger.</p>	 
<p><b><u>Warning sign</u></b></p> <p>This gives a warning of a hazard or danger.</p>	 

<p><b><u>Mandatory sign</u></b></p> <p>This prescribes a specific behaviour that must be followed.</p>	
<p><b><u>Green sign</u></b></p> <p>This gives specific information.</p>	

#### 4.24. Soldering and Spot Welding

All soldering and spot-welding activities must be risk assessed, and only carried out in designated areas with **sufficient local exhaust extraction (LEV)**, away from all sources of ignition. Since solder is hazardous to health a relevant CRA risk assessment must also be produced or included within the soldering risk assessment. The workplace exposure limits (WELs) for rosin-based solder fume are as low as reasonably practicable but **must be below 0.05 mg/m<sup>3</sup> 8-hour time weighted average (TWA) and 0.15 mg/m<sup>3</sup> 15-minute Short Term Exposure limit (STEL)**.

Academic Supervisors and Line Managers must implement appropriate control measures. Only trained and competent users can carry out these activities. Risk assessments should be in place before work commences. The Physics intranet has an example [soldering risk assessment](#) that can be used as a starting point to adapt to your own assessment. Videos on [Basic Soldering Techniques](#) and [Soldering – Best Practice](#) are also available to aid safe working practices when soldering.

Use of tin/lead based solder is not recommended due to the risk of lead poisoning. Always wash your hands after soldering. Rosin based solder flux fumes are produced when soldering. This fume is a top cause of occupational asthma. Contact with this solder fume and its residues can also cause skin problems such as dermatitis. Best practice would be to use lead-free and rosin-free solder.

Cadmium based solder is banned due to its serious health effects, please contact the School Safety Advisor (Department of Physics) if any is present in your laboratory so it can dispose of correctly by a chemical waste contractor.

If you are purchasing a soldering unit, please contact the I&F Technical Operational Manager who can advise, the unit will also need to be registered on the insurance database. Monthly checks are carried out by the I&F technical team.

Further guidance on control measures when soldering can be found on the HSE website below:

<http://www.hse.gov.uk/pubns/guidance/oce4.pdf>

#### 4.25. Suitable Clothing

In addition to the mandatory [PPE](#) identified in risk assessments, laboratory, workshop and clean rooms workers should:

- Ensure long hair is tucked away.
- Wear clothing that ensures that their legs are entirely covered (note - tights do not provide adequate protection).
- Wear flat, closed footwear.
- Remove jewellery when there is a risk of entrapment and drawing-in.

#### 4.26. Vibration

All equipment and activities that produce vibration must be risk assessed. The Academic Supervisor and Line Manager must implement appropriate control measures to minimise the level of vibration in the work area. Vibration levels of equipment should be specified in the risk assessment; this information can be found in the manufactures handbooks; they legally must supply this information. Using the [HSE Hand-arm vibration calculator](#) it is possible to calculate the duration the equipment can be used for before exceeding the daily exposure action value (EAV) of  $2.5 \text{ m/s}^2$  and an exposure limit value (ELV) of  $5 \text{ m/s}^2$ . To be cautious the Department recommends not exceeding the EAV on any one day.

There are 2 categories of vibration: (i) whole-body and (ii) hand-arm.

Regular or prolonged exposure to vibration can cause long-term health damage, such as hand-arm vibration syndrome (HAVS) or carpal tunnel syndrome (CTS).

Some vibrating equipment also produces high level of noise. Therefore, a noise assessment may be required.

Anyone frequently exposed to vibration must undergo health surveillance with Occupational Health.

Where possible, organise work and design workstations to avoid uncomfortable postures and the need for high manual effort to grip, push or pull equipment. To avoid excessive exposure from vibration, take regular breaks and consider job rotation to lower exposure levels.

When selecting equipment, consideration should be to buy low vibration equipment to avoid the ill-health effects from vibration. Equipment can deteriorate with time in terms of vibration, employees should report it at the earliest opportunity to enable management to investigate.

Further information can be found in [HSG guidance document INDG175](#) and University guidance document at the link below:

<http://documents.manchester.ac.uk/display.aspx?DocID=33123>

## 4.27. Welding

The main categories of hazard associated with welding are Health-related:

- exposure to fume and gases generated during welding
- noise and vibration
- manual handling

and Safety-related:

- fire and explosion
- lack of oxygen in confined spaces
- electrical hazards
- slips and trips

Welding activities must only take place by qualified welders. All welding activities must be risk assessed.

General guidance on welding can be found in the Safety Services Toolkit link below:

<https://www.healthandsafety.manchester.ac.uk/toolkits/equipment/welding/>

Specifying Safety Critical Welds guidance can be found in the University guidance document link below:

<http://documents.manchester.ac.uk/display.aspx?DocID=15587>

Further guidance on welding can be found on the HSE website:

<http://www.hse.gov.uk/welding/index.htm>

## 4.28. Working at height

Specific arrangements for the JBO site can be found in section 6.

**Working any distance above ground level is classed as Working at Height.** Therefore, all users of ladders, stepladders, kick-stools and working platforms should be trained and competent. Work at height also includes work in locations or situations which are below ground level, e.g. accessing a pit or a confined space.

Avoid work at height where it is reasonably practicable to do so.

An online training course is available from the Learning and Organisational Development:

[TLCO500 Ladder Awareness Online](#), those routinely working at height should complete this course.

All users of such equipment must carry out a pre-use check to ensure they are in good condition and free from defects. All work must carry a valid risk assessment. Defective equipment must be reported to the Academic Supervisor or Line Manager and be removed from use immediately. At JBO, report issues to the Site Safety Advisor.

**All kick stools, stepladders, ladders and working platforms must be registered on the Department's Ladders Inventory, contact the School Safety Advisor (Department of Physics). All stepladders, ladders and working platforms must have a Laddertag and be in-date. Ladders must be inspected annually using the [Physics ladder checklist](#). Do not use if the inspection date has expired.**

Only class 1 or EN131 step ladders and ladders should be used within the Department. The University does not allow the use of wooden ladders.

[Example ladder risk assessment](#) can be found here.

**No lone working at height is permitted within the Department. Working at height is not permitted out-of-hours.**

The University's Guidance on Working at Height can be found below:

<http://www.healthandsafety.manchester.ac.uk/toolkits/wah/>

At JBO, working at height also includes [Mobile Elevated Platforms / Cherry Pickers](#) and working on the [Telescopes](#). Please follow the links to those sections for more information.

## 5. Jodrell Bank Observatory - Organisational Control, Responsibilities and Roles

### 5.1. Health and Safety accountability at JBO

The JBCA Director and Lovell Chair is in overall charge of Jodrell Bank Observatory and is responsible for Health and Safety at JBO and the outstations. They report to the Head of Department.

They are supported by the Associate Director for JBO/Director of eMerlin and VLBI National Facility, who has responsibility for the JBO site and outstations.

The Site Safety Advisor oversees day to day operations and is the first port of call for reporting issues.

#### 5.1.1. Jodrell Bank Governance Group

Jodrell Bank has three organisations sharing one site:

- Jodrell Bank Observatory (JBO)
- Jodrell Bank Centre for Engagement (JBCE)
- Square Kilometre Array Observatory (SKAO)

JBO and JBCE are both part of the University of Manchester but managed separately. SKAO is an independent organisation with IGO status.

JBO and SKAO share an access route onto site. JBO accesses the telescope compound through JBCE.

Jodrell Bank Governance Group is chaired by the Associate Vice-President (Consultant Adviser to Senior Leadership Team) and attended by the JBCA Director, SKAO Director and JBCE Director. They meet twice a year to discuss site-wide issues.

Membership:

Associate Vice-President (Consultant Adviser to Senior Leadership Team)	Will Spinks	University of Manchester
Director General of the SKAO	Phil Diamond	SKAO
Director of Corporate Strategy	Simon Berry	SKAO
Head of Department of Physics and Astronomy	Christopher Parkes	University of Manchester
Director of JBCA, Department of Physics and Astronomy	Mike Garrett	University of Manchester
Vice President Social Responsibility	Nalin Thakkar	University of Manchester
Director of the Jodrell Bank Centre for Engagement	Teresa Anderson	University of Manchester
Head of Faculty Estates - Science and Engineering	Mike Billington	University of Manchester



Secretary and School Operations Manager	Sam Ryder	University of Manchester
Administrative Support and minutes	Laura Knighton	University of Manchester

Purpose:

- To provide a forum within which strategic plans for each organisation can be shared and discussed at least annually.
- To develop, approve and review areas of work that need to be jointly managed in order to facilitate the progression of these plans.
- To identify where any outcomes from these areas of work may need to be discussed and approved within respective “parent” organisations.
- To identify key operational matters that need to be jointly considered and agreed by all parties with a significant presence on the site.
- To approve work plans and commission activity to address the agreed key operational matters.
- To agree and implement, wherever possible, the outcomes of the jointly commissioned activity.
- To identify where any outcomes from these areas of work may need to be discussed and approved within respective “parent” organisations.
- To act as a forum to which current operational issues can be brought.

### 5.1.2. Operations Group

This is a cross-organisational group which enacts decisions of the Governance Group.

Membership:

Site and Safety Manager, JBO	Mike Anderson
Facilities Manager, SKAO	Joe Heys
Visitor Services Facilities Manager, JBCE	Andy Benson
Venue Hire Manager, JBCE	Jennifer Holland

## 5.2. JBO Management Team meeting

The JBO Senior Management Team meet fortnightly. The agenda has a standard item to discuss Health and Safety issues and incidents and determine any actions necessary.

### 5.2.1. JBO Health and Safety Committee

This is a standing committee that covers Health and Safety issues at the Jodrell Bank Observatory. Details can be found in [Section 1.19](#).

### 5.2.2. JBO Staff and Visitors

“JBO staff” are defined as staff who spend the majority of their time at JBO. As these Physics and Astronomy staff are based some distance from the main campus, the local manager to whom they are responsible is the Director of JBCE. This is especially important for safety. Visitors are in two categories; external non-university staff who are visiting JBO, and Physics

and Astronomy staff who usually based on the main campus who are visiting JBO. The Director of JBCA should ensure procedures exist to manage office, IT, and safety matters for visiting staff.

## **6. Local Arrangements – Jodrell Bank Observatory**

### **6.1. Abrasive wheels**

No person may operate these tools unless they have been properly trained in their use, hold a current certificate of training and be competent and authorised. The Site Safety Advisor can assist in obtaining appropriate training. The noise generated by this equipment is greater than the first action level and therefore hearing protection is required.

This type of equipment shall not be used unless adequate personal protective equipment including eye protection is provided and worn.

### **6.2. Driving and Vehicles**

Before any JBO vehicle is used, permission must be obtained from the Site Safety Advisor or his deputy and the name of the driver must be recorded in the Proxsafe database and user added by the Site Safety Advisor.

The driver of the vehicle must possess a valid licence appropriate to that class of vehicle, and must be named on a list of authorised drivers maintained by the Site Safety Advisor. This includes vehicles driven off the public highway. Authorised drivers must allow their licences to be checked online on the DVLA website annually. Any conviction for a driving offence must be reported to the Site Safety Advisor immediately, and may result in the driver being barred from using JBO vehicles.

It is the responsibility of the driver to ensure that the vehicle is safe to use. In particular, drivers should check the oil and water, and satisfy themselves that the brakes, lights, tyres, mirrors and windscreen wipers are in good working order. Any fault, however small must be reported when handing back the keys to the key cabinet. It is the responsibility of the JBO vehicle inspector to ensure the vehicle is safe to drive before authorising its use.

Drivers must take a break of at least 15 minutes after driving for 2 hrs, and must not drive for more than 6 hrs (total) in one working day. Driving is not permitted more than 12 hrs after the start of a working day without driver rotation, or at any time when tiredness or illness may impair safety. The University's Driving at Work toolkit can be found [here](#).

Where a vehicle has equipment whose operation requires special precautions (e.g. a hydraulic platform or power take-off), this equipment may be used only by staff with appropriate training or supervision. This is controlled at JBO by an electronic key cabinet. [Training in the use of the tractor](#) can be provided by the Telescope Supervisor and only added to the database when full working knowledge of the machine can be established.

### **6.3. Electrical arrangements**

Please also see the main site arrangements in [Section 3.3](#).

The Electricity at Work Regulations (1989) impose absolute duties on employers and employees to ensure the safety of all electrical systems and equipment. In particular, work subject to the Regulations may be undertaken only by suitably qualified people. The suitably qualified people at JBO are the electricians, under the supervision of Ray Comber – Electrical Engineer. They must be consulted at the design stage about any installation, modification or non-proprietary equipment which may present a hazard and, in particular, any which uses voltages in excess of 50V AC or 120V ripple-free DC.

The electricians also organise regular safety testing of electrical appliances in accordance with the Regulations. All appliances used at work are subject to these tests, including proprietary equipment and personal property, and users must ensure that their equipment is made available for testing. When any electrical equipment is purchased or newly brought to JBO, the person responsible for it must inform the Telescope Engineer so that it may be included in the test programme. Equipment tested will be labelled and the test results recorded, to demonstrate compliance with the Regulations. Unsafe equipment must be withdrawn from use immediately and arrangements for repair or procurement of a safe replacement is the responsibility of the user.

Residual Current Devices and similar safety equipment are also subject to regular testing by the Electricians. The users of circuits protected by these devices are responsible for ensuring that the tests can be conducted conveniently.

In the event of a power outage you need to consult the [Emergency Power Outage](#) procedure.

### **6.3.1. User checks**

All equipment users must:

- Carry out pre-use visual checks and regular examination of the equipment for signs of damage or deterioration
- Carry out safe operation of the equipment, according to training, risk assessments and operating manuals
- Only use equipment that is fit-for-purpose or use equipment in a suitable environment (e.g. wet environment with a residual current device (RCD))
- Report defects to the Academic Supervisor, Line Manager or Technical Support Staff
- Not overload power supplies or “daisy-chain” cables and extension leads
- Not trail cables across access and egress
- Not modify equipment unless qualified and competent to do so
- Not use equipment that has not been electrically tested

It is the responsibility of the Academic Supervisor or Line Manager of an area to ensure defective equipment is taken out of use. Defective electrical equipment should be given to the electrical department at JBO, who may be able to fix the equipment.

All electrical equipment which is defective and is to be disposed of should be labelled to warn others. Electrical equipment for disposal must be passed through the electrical department at

JBO for removal from the electrical testing database and disposed of via the electrical waste storage facility.

Staff and students should seek the permission of their manager, supervisor or principal investigator before bringing personal electrical items of equipment into the Department for use. Any such personal items of equipment must be safe and be included in the regular Department testing programme.

The University's Guidance on the Maintenance of Electrical Equipment can be found below:

<http://documents.manchester.ac.uk/display.aspx?DocID=15604>

### **6.3.2. High voltage work**

Where the user or others may be exposed to high voltage, this must be covered by a comprehensive risk assessment with the relevant controls in place. High voltage is defined as "a voltage in excess of 1000 V ac or 1500 V dc." Any lab which uses high voltage equipment must ensure the external door shows this risk. Care should be taken to ensure cleaners and other visitors of the lab are not exposed to these hazards.

### **6.3.3. Live equipment**

Defined as "equipment that is at a voltage by being connected to a source of electricity. Live parts that are uninsulated and exposed so that they can be touched either directly or indirectly by a conducting object are hazardous if the voltage exceeds 50 V ac or 120 V dc."

**Live work** is defined as "work on or near conductors that are accessible and 'live' or 'charged'. Live work includes live testing, such as using a test instrument to measure voltage on a live power distribution or control system."

**Live work** on systems over 50V is NOT permitted unless covered by a comprehensive risk assessment that is specific to the actual task. In any event, **lone working on live equipment is prohibited.**

**All work on high voltage and live equipment must be signed off by the Head of Group or line manager of the area to show they consent to this high risk activity and that the correct controls measures are in place to ensure everyone's safety.**

## **6.4. Fire Safety / Emergency procedures**

The fire alarms are tested remotely by Estates on a Friday morning.

Any malfunction of the alarms or inaudibility should be reported to the Site Safety Advisor.

At all other times IF THE FIRE ALARM BELLS SOUND: Evacuate the building as follows:

- 1) Switch off all electrical equipment and gas supplies if safe to do so. Close windows and shut any doors behind you.
- 2) Walk out via the NEAREST exit or fire exit. Do NOT stop to collect personal belongings. Obey any instructions from the staff or emergency authorities.

3) Fire assembly points are:

- Control Building – at the base of the 42ft telescope away from the main entrance.
- Main development lab – on the Green.
- Dormitory & Telescope workshop – the power house car park area.
- JBCE – Visitor car park.

4) Do NOT impede the fire brigade or other emergency services.

5) Do NOT re-enter the building until told to do so by the fire officer in charge.

If you have a personal health issue which might affect your ability to leave the building promptly in an emergency situation then you should contact the Site Safety Advisor so that a suitable personal emergency evacuation plan (PEEP) can be discussed and drawn up.

### **Action to take in the event of discovering a fire**

If there is NO danger to yourself and you have received relevant training you may attempt to put out the fire using the appropriate extinguisher. Always position yourself between the fire and an exit. Do not take personal risks. If you have any doubts about your ability to put out the fire, leave the room, shut all doors, sound the alarm and call the fire brigade (internal 9-999).

The following procedures can be found on the [JBO H&S intranet](#):

- [Fire action procedure for the control room](#)
- [Fire action procedure for contractors working on the Lovell Telescope](#)
- [Fire action Procedure for the Lovell Telescope](#)

#### **6.4.1. Fire Prevention**

A major hazard in any laboratory or workshop is fire. The following precautions should be observed to minimise the risk and spreading of fire:

Fire doors and smoke doors must be kept closed at all times. Do not wedge them open.

Fire exit routes must be clearly marked and free from obstruction.

All staff and students must be familiar with the emergency procedures to be followed in the event of a fire.

All staff and students must be familiar with the type, location, colour coding and use of fire extinguishers and other fire-fighting equipment.

#### **6.4.2. Fire Extinguishers**

EEC regulations require that all fire extinguishers are red with an identifying triangle to indicate the type of extinguisher. The colour of the triangle corresponds to the classifications given below.

**Black:** CO<sub>2</sub> extinguishers. These do not have an appreciable cooling effect and when the CO<sub>2</sub> has evaporated there may be spontaneous re-ignition. CO<sub>2</sub> extinguishers **MUST NOT** be used on alkali metal fires.

**Blue:** Dry Powder. These extinguishers are suitable for use with fires involving metal hydrides, magnesium or alkali metals, but should only be used in essential cases because the dispersed powder is difficult to clean up.

**Red:** Water -filled extinguishers. These are suitable for use with fires involving paper, wood, textiles and fabrics. DO NOT USE water on electrical or chemical fires.

**Cream:** Foam water based fire extinguishers. These are suitable for use with fires involving paper, wood, textiles and fabrics or flammable liquids.

Dry sand is useful for sodium fires.

Any extinguisher that has been used, even partially, must be immediately exchanged for a fully-charged one via the Site Safety Advisor.

All internal areas are designated as NO SMOKING areas.

Please do not congregate around the building entrances whilst smoking.

A fire plan for the control building can be found in the Emergency procedures section, [here](#).

Guidance for the Schuster and Turing buildings can be found in [Section 2](#).

## **6.5. First Aid**

First Aid Boxes are green and contain a small supply of plasters, bandages and dressings. Deficiencies in the stock of a First Aid Box should be reported to a First Aider or Departmental Safety Advisor.

The Department has a number of members of staff who are designated as authorised First Aiders. These people have been trained up to standards approved by the Health & Safety Executive, and hold a current First Aid at Work Certificate their names are listed below.

Lists of first aiders are placed around the observatory and its outbuildings.

A defibrillator unit is located in the main control building on the Lovell Telescope access route.

First aid boxes are located within every building and telescope area.

A map of where the main control building first aid supplies are located is in the Emergency procedures section, [here](#).

Guidance for the Schuster and Turing buildings can be found [here](#).

## **6.6. Lone Working**

University and campus guidance about lone working can be found in [Section 2](#). This is additional guidance for JBO.

At least two competent people must be present throughout any hazardous operations

- With rotating machinery or machine tools
- On live electrical equipment with the covers removed
- With reactive chemicals
- On high structures (apart from routine inspections conducted using standard access routes)
- At [outstations](#) (apart from "office work" activities restricted to the equipment building)

Before any lone working can commence an assessment must be completed in writing, and a copy submitted to the Site Safety Advisor.

The staff based in the main control room at Jodrell Bank work on a shift basis 24hrs a day 365 days a year. Occupational Health issue nightworker questionnaires and will take any appropriate action on the response.

Security are required to carry out regular checks with the control room staff and have access to 2-way radios at all times.

Any student or group of students engaged in a hazardous activity must be accompanied by an experienced member of staff, who will be responsible for their safety.

### **6.7. Mobile Elevated Platforms/ Cherry Pickers**

JBO will ensure that the correct type of mobile elevating work platform is selected for any work task that is to be undertaken. Under no circumstances will any member of staff be permitted to operate the equipment without proper and adequate training specifically for the type of machine being used.

It is JBO policy to issue safety harnesses and to ensure that they are worn at all times by employees using the working platform via the use of fixed length lanyards.

Prior to using any equipment, the operator will undertake daily inspections of the equipment before commencing work to ensure that the equipment is in working order.

### **6.8. Optical Fibre**

Under normal operating conditions, a fibre system forms an enclosed environment for optical radiation. That changes if a non-shielded plug is disconnected or a fibre is broken. The overriding priority is to ensure that all personnel - whether cable installers or equipment technicians - are protected from laser hazards under all reasonably foreseeable conditions. At Jodrell Bank we are concerned with lasers up to and including Class 1 & 1M.

**NEVER** look down a fibre to check if it is working.



## **6.9. Outstations**

The outstations, including most of the repeater stations, are unmanned, remote sites. In these circumstances, the consequences of otherwise minor accidents or ailments could be severe for an individual working alone. Lone visits to outstations are therefore discouraged and must be restricted to entirely non-hazardous operations. Always report by telephone to the Duty Controller at Jodrell Bank on arrival at an outstation and before you leave it. This applies whether or not there are other people on site. It allows the Controller to maintain a list of the personnel at each site which may be consulted in the event of an emergency. Any person attending a site alone must follow the [lone worker procedures](#) and obtain a Peoplesafe lone worker device from the main control room at Jodrell Bank before leaving. [Usage instructions](#) can be found on the JBO intranet.

## **6.10. Unmanned Aircraft**

Jodrell Bank does not allow the use of unmanned aircraft anywhere on its site without prior arrangement with management.

For the purposes of this arrangement, the term “unmanned aircraft” means a device that is used or intended to be used for flight in the air without the possibility of direct human intervention from within or on the device. This includes the associated operational elements and components that are required for the pilot or system operator in command to operate or control the device (such as cameras, sensors and communication links). This term includes all types of devices that meet this definition (e.g. model airplanes, quadcopters, drones that are used for any purpose, including for recreation or commerce).

## **6.11. Telescopes**

The Duty Controller is responsible for ensuring the safe operation of all the telescopes, and has authority over all users of the telescopes and all personnel on the structures. Any difficulty encountered must be reported to the Duty Controller without delay.

Permission must be obtained from the Duty Controller to gain access to the telescope.

The telescopes are high, moveable structures which may be operated remotely and start without warning. The drives must be isolated before personnel approach any hazardous location on a telescope, and it is essential to ensure that all personnel are clear of the hazardous areas of the structure and all equipment is correctly stowed before any movement is attempted.

There are several different types of telescope, each with a different set of operating procedures and safety regulations. Details of these procedures and regulations are held in the Control Room. They must be studied and followed by persons intending to operate the telescopes or have access to them.

Document control box	
Title	P&A H&A Policy
Date approved	16/02/22
Approving body	P&A HSW Committee
Implementation date	October 2018
Version	<p>V14.1 (changes to personnel, minor changes on arrangements) Aug 2022</p> <p>V14.2 (changes to laser arrangements) Oct 22</p> <p>V14.3 (reordered list in 1.19, updated membership in 5.1.1 and 5.1.2. Jodrell Bank Discovery Centre (JBDC) name updated, DSE links changed Oct 22</p> <p>V14.4 – (changes to 3.3 - electronic workshop process) Nov 22</p> <p>V14.5 – minor changes to DSE assessment Dec 232.</p> <p>V14.6 – changes to DSE eye tests, UCU rep change Feb 23.</p> <p>V14.7 – change to local BSA to Faculty advisors April 23.</p> <p>V14.8 – changes in personnel (July 23)</p> <p>V15 – Personnel changes, minor changes to arrangements, addition of non-ionising radiation advisor and health hero/EAP service. Significant changes to BSA advisors and BSA arrangements. Removal of 3<sup>rd</sup> and 4<sup>th</sup> year UG student allowed out of hours. Additional of keypads undesirable, ventilation and how to report issues. Expansion of housekeeping, training, competency, staff exit check list and LabCup arrangements. Changes to hazardous waste processes (Feb 24).</p> <p>V15.1 – personnel change HoD, PAT testing of offices changed from 3 to 4 years. Addition of lecture gas bottles to 4.21.1 (April 24)</p>
Next review date	April 2025
Owner of Chapter	School Safety Advisor