26. Chemical safety

26.1 Compliance with legislation

The principle health and safety legislation affecting chemical laboratories is the Control of Substances Hazardous to Health Regulations (COSHH). These impose various duties on the University and its staff and students. Full guidance is available at http://www.ed.ac.uk/schools-departments/health-safety/guidance/hazardous-substances/coshh.

It is important that senior management within laboratory areas identify the health and safety legislation relevant to their work activities and implement measures to ensure compliance. Guidance on some of the other more common legislation pertinent to chemical laboratories, including the Dangerous Substances and Explosive Atmospheres Regulations, the Classification, Labelling and Packaging of Substances and Mixtures Regulations and Registration, Authorisation and Restriction of Chemicals is available at http://www.ed.ac.uk/schools-departments/health-safety/guidance/hazardous-substances.

26.2 Liaison with Enforcement Authorities

Any contact by the Health and Safety Executive (HSE) on matters of chemical health and safety should immediately be relayed to the Health and Safety Department. Further guidance on University policy on contact with the HSE is at http://www.ed.ac.uk/schools-departments/health-safety/safety-roles/school-area-advisers.

26.3 Organisation

There are no specific roles within chemical laboratories that University staff are required to undertake. However, all laboratory users must follow the risk assessments, laboratory rules and standard or safe operating procedures (SOPs) of that School. Laboratory managers and Principal Investigators must be appropriately experienced and trained. Technicians must be appropriately experience, trained or supervised (if appropriate).

The Occupational Hygiene Unit is available for help and guidance, contact details at http://www.ed.ac.uk/schools-departments/health-safety/about/units/occupational-hygiene.

Good laboratory practice should be followed by all laboratory users. Further guidance is available online at https://www.ed.ac.uk/health-safety/guidance/laboratories-workshops.

26.4 Risk assessments

The COSHH regulations impose duties on the University to protect its staff and any other persons, whether at work or not, who may be affected by the University's work involving substances hazardous to health. In order to ensure compliance with the Regulations, Heads of School must ensure that work is not undertaken that is liable to expose any employees, students or others, to any

substance hazardous to health, or ensure that the exposure is kept to a minimum after a suitable and sufficient risk assessment is undertaken by a competent person. The results of these risk assessments, usually in the form of standard or safe operating procedures (SOPs) or safe systems of work (SSW), must be communicated to all relevant staff and students prior to work being undertaken. Full guidance is available at http://www.ed.ac.uk/schools-departments/health-safety/guidance/hazardous-substances/coshh.

It is the responsibility of the person in charge of the area or procedure to ensure that risk assessments are undertaken – this may be the Principal Investigator, Supervisor, Tutor or Laboratory Manager.

Template COSHH forms and guidance are available at http://www.ed.ac.uk/schools-departments/health-safety/risk-assessments-checklists/risk-assessments.

26.5 Instruction, information and training

All persons working or studying in laboratories where hazardous chemicals are stored, used or prepared must receive information, training and supervision appropriate for the work undertaken, so that risks to the health and safety of all persons potentially involved are effectively controlled.

All such workers must undergo a local laboratory induction session. Specific COSHH training courses can be arranged by the Health and Safety Department. This central training must be augmented by local training in specific techniques, standard operating procedures or safe systems of work. Further guidance is available at https://www.ed.ac.uk/health-safety/guidance/hazardous-substances/instruction-supervision-training.

Training must also include what to do in an emergency. Further guidance is available at https://www.ed.ac.uk/health-safety/guidance/laboratories-workshops/lab-management.

Records must be kept of all such training given.

Laboratory workstations and equipment may have their own specific ergonomic hazards. An online training course is available to ensure these hazards are appreciated and how to control them, http://www.ed.ac.uk/schools-departments/health-safety/training/e-learning/cardinus/lab-ergo. A checklist for the use of microscope benches has also been developed, http://www.docs.csg.ed.ac.uk/Safety/includes/guidance/Microscope_workbench_checklist.pdf.

26.6 Supervision

All staff who supervise work carried out by students, research assistants, and technical staff are required to give careful attention to the health and safety of those under their supervision. This applies not only to work on University premises but also to University work carried out elsewhere either in the UK or abroad. To fulfil its function, the degree of supervision must have reasonable regard for the level of training and expertise of the staff or students being supervised.

The University has a duty to ensure that students do not create unsafe conditions by unauthorised initiatives and supervision must be adequate to meet this requirement. Accordingly, prior to the commencement of any hazardous work or activity, the Principal Investigator (PI) or other supervisor should provide, obtain or agree to appropriate procedures which would minimise foreseeable risks and thereafter should keep in regular touch with the student's work. During any prolonged absence of the PI or supervisor, a second designated supervisor should be available to ensure that established health and safety procedures are maintained.

Further guidance is available at https://www.ed.ac.uk/health-safety/guidance/hazardous-substances/instruction-supervision-training.

26.7 Control measures

Appropriate control measures will have been identified during the risk assessment process. It is the responsibility of the School to ensure these control measures are fit for purpose, implemented and any equipment maintained appropriately. Some equipment will be maintained by Estates Department. However, Schools must ensure this equipment is available for testing and any defects are reported as soon as possible, and the equipment removed from use if appropriate. Further guidance on laboratory fume cupboards is available at https://www.ed.ac.uk/health-safety/guidance/laboratories-workshops/general-laboratory-design-and-equipment.

Personal protective equipment (PPE), including respiratory protective equipment (RPE), must be worn at all times where stipulated by the relevant risk assessment. It is the responsibility of the line manager/PI/supervisor to ensure it is worn and used properly by all staff and students. Any PPE (including RPE) required by the risk assessment, must be provided by the School to staff at no extra cost. The School may choose to provide PPE (including RPE) to undergraduates and postgraduates at no cost but are not obliged to do so, and can charge for this equipment. Provisions must also be made locally for visitors and contractors – either provided for them by the School or provided by the contractor as agreed, prior to access.

Further guidance is available at https://www.ed.ac.uk/health-safety/guidance/ppe.

26.8 New facilities and equipment

Health and safety must always be taken into consideration when planning a new facility or upgrading or refurbishing an existing one. It is essential that the designers/architects consult at an early stage with the users as to specific requirements and it is recommended that a member of the University's corporate Health and Safety Department is invited to attend early project and design meetings along with users representatives in order to ensure that health and safety matters are raised or considered and that appropriate expertise is available.

Equipment should be chosen after careful consideration of all requirements including level of control or containment needed as well as space, utilities and

cost considerations. Further guidance is available at https://www.ed.ac.uk/health-safety/guidance/laboratories-workshops/general-laboratory-design-and-equipment.

26.9 Health surveillance and static/personal monitoring

26.9.1 Health surveillance

Under the COSHH Regulations, work with certain hazardous substances require statutory health surveillance to ensure controls in place are sufficient to protect those possibly exposed. Statutory health surveillance is undertaken by the University's Occupational Health Unit. It is the responsibility of the PI/supervisor to identify the need for health surveillance within the risk assessment process and ensure those identified attend for health surveillance.

26.9.2 Static/personal monitoring

In certain circumstances, static or personal exposure monitoring may be required to ensure control measures are adequate – contact the Occupational Hygiene Unit for further information, http://www.ed.ac.uk/schools-departments/health-safety/about/units/occupational-hygiene.

26.10 Undergraduates, visitors and contractors

Maintenance staff, contractors, undergraduates and visitors cannot, and indeed must not, be expected to make competent risk assessments as to the hazard potential of working in a specific area of a laboratory, or on an item of laboratory equipment. Such risk assessment can only be undertaken by persons with sufficient technical/academic knowledge of the activities being undertaken and substances/equipment being used.

It is therefore imperative that maintenance staff and contractors work only to the permit-to-work system provided and that any safety requirement, including the wearing of specific personal protective equipment (such as gloves, overalls, goggles etc.), is adhered to. The host laboratory should provide any specialist personal protective equipment that is required e.g. gloves of a specific material. Work must never be extended out with the area covered by the permit-to-work without obtaining a new or signed alteration to the permit from an authorised and competent member of the laboratory staff.

A downloadable Laboratory Permit to Work form in pdf format and further guidance on this important subject is available at: http://www.ed.ac.uk/schools-departments/health-safety/guidance/laboratories-workshops/access.

Undergraduates can assist in the formulation of a risk assessment, but the assessment must ultimately be signed off by a senior member of the laboratory team before work is undertaken. Undergraduates should never work alone or out of hours in a laboratory without supervision.

All visitors must receive an appropriate induction including hazards in the laboratory, supplied with required PPE (including RPE) and informed of when to wear it, and emergency procedures. Casual visitors must never be left alone or out of hours in a laboratory. Visiting researchers may work alone and out of hours after appropriate training has been received.

Children are not allowed into University laboratories, except for organised Open Days with suitable supervision.

26.11 Monitoring, review and audit

All laboratories should be included in a regular inspection programme. This could include weekly walk-throughs but also more formal monthly and annual inspections. Each School must formulate its own inspection regime as appropriate. Model templates and guidance are available on the Health and Safety Website at http://www.ed.ac.uk/schools-departments/health-safety/risk-assessments-checklists/checklists.

Accidents must reported using the standard University accident reporting system. Incidents can be reported online using the form at http://www.ed.ac.uk/schools-departments/health-safety/accident-reporting. Potentially serious accidents should be reported to the Health and Safety Department via telephone and subsequently followed up by the submission of an online accident and incident form.

26.12 Decommissioning of laboratories

When a research group leaves a laboratory or a building which is being emptied for refurbishment or vacated, the research group or School must undertake a thorough decommissioning of the area, including the disposal of unused hazardous substances and cleaning of all surfaces. A checklist to assist in this process is available at http://www.docs.csg.ed.ac.uk/Safety/ra/lab_decom.pdf and should be made available to any future occupiers of the area.

Extract from Health and Safety Policy – Framework: Arrangements (http://www.docs.csg.ed.ac.uk/Safety/Policy/Framework_-_Arrangements.pdf) dated 31/05/2016