UNIVERSITY OF SUSSEX

Science Schools

Safety Handbook

EMERGENCIES
AT ALL TIMES CALL
INTERNAL 3333

University of Sussex

Health and Safety Policy
May 2009

Foreword

The health and safety of staff, students and visitors is of paramount importance to the University. The objective of our Health and Safety Policy is to enable the University to operate effectively and allow its staff, students and visitors to undertake their activities without detriment to their health, safety and wellbeing. Application of good practice in health and safety is recognised as being a key component in achieving high quality teaching and research. It is also acknowledged that failings in health and safety could not only have a y to conduct its business but also harm our reputation as well.

commitment to good practice, responsibilities for health and safety, and the standards that we, the Executive and Council, are determined shall be met.

Good health and safety practice will only be achieved if staff, students and their visitors give their full support to the actions outlined within the policy.

Professor Michael Farthing	Mr Simon Fanshawe
Vice-Chancellor and Chief Executive	Chair of Council

I INTRODUCTION

This booklet is intended to help you avoid accidents. Accident prevention must be the aim at all times. The effects of accidents may be disastrous not only to you but also to your colleagues. It is therefore important that you read the advice given here at the start of your work in the university. Accident prevention is mainly common sense, tidiness and forethought, but safety in the laboratory does require constant vigilance and care. Always seek expert advice when in doubt about the safety of a practice.

Safety in Universities is regulated by UK criminal law, which is set down in the HASAWA 1974 and in a series of associated regulations, notably the Management of Health and Safety at Work Regulations, under which prosecutions may be brought against individuals rather than against the University. Inspectors from the Health and Safety Executive enforce safety regulation. They have the right of access into university buildings at any time and have the power either to serve enforcement notices or prosecute an individual member of the University or the University itself. Enforcement notices may be either,

i) Prohibition a notice may be served to close a laboratory or workshop or to stop an individual carrying out a particular action, or.

ii) ii) An improvement notice, which will require some change in practice or procedure or the provision of additional safety equipment. A time will be set for this to be complied with

The effective management of safety therefore involves not only taking care to prevent injury, suffering or lost which result from accidents, but also achieving compliance with safety legislation and ultimately avoiding the severe penalties which may be imposed by the HSE or the courts. The school safety handbook is therefore an important component of the safety management safety being designed to give

Out of Hours Running of Unattended Experiments

Experimental apparatus or equipment should not be left running unattended out of hours unless absolutely necessary, in which case a risk assessment shall be carried out and a permit providing emergency contact details, etc. completed and prominently displayed in an appropriate location. Both must be authorised by the Supervisor responsible for the work. See the School *Rules for Out of Hours Running of Unattended Experimental Apparatus*.

2 REPORTING OF ACCIDENTS AND INCIDENTS

All accidents where someone is hurt, regardless of extent of injury, or any incident where someone could have been injured, must be reported to the School Safety Coordinator or your supervisor. Completion of an online accident/incident report form is a statutory requirement.
Accidents involving ionising radiation must be reported immediately to the University Radiation Protection Adviser

III EMERGENCY PROCEDURES

In an emergency there will be no time to find out what you have to do.
Therefore you should familiarise yourself with the emergency procedures.

You must know:-

The layout of your Buildings.
The location of fire escapes (especially for outside normal hours)
The position of fire extinguishers and how to operate them
The sound of your nearest fire alarm and how and where it is set off
The position of nearest telephone which gives access to the Emergency Services
Where and how to obtain First Aid help
Any special local precautions
Where to obtain accident report forms, which should be filled in and sent to School Safety Advisor for all accidents and significant "near misses"

1 GAS- SIGNIFICANT LEAKS

a) Dial 3333 on the internal telephone.

b) Extinguish naked flames, switch off sparking motors, post warning notices and keep people out of the area. Do not operate any other switches.

2 ACTION ON HEARING THE FIRE BELL or ALARM SOUNDER

a) Leave your room or area.

b) Go to your assembly area which will be away from the building entrance. Do not use the lift when evacuating the building.

3 ACTIONS ON DISCOVERING A FIRE

a) Operate fire alarm.

b) Check for persons at risk - (if no personal risk is involved).

c) Only attempt to fight a fire if it is small, you have a clear escape route at all times **and** you have been trained to do so

4 FIRE EXTINGUISHERS

Those extinguishers which have been used for fire fighting must be replaced immediately, inform the School Safety coordinator or the Estates complex supervisor via the Porters.
Remember that different classes of fire require the use of different extinguishing media.

CO_2 - General use on small fires, particularly for electrical and small flammable liquid fires
Foam - Multi purpose, particularly for solvents, flammable liquids
Dry Powder - Fires involving metals e.g. Na, K, organo metallics, etc. and electrical fires.
Other types of extinguishing media are obtainable for specific purposes. Seek advice if you have a particular fire risk, e.g. some laboratories have special dry powder extinguishers for lithium fires.
Fire Blankets
These should only be used to put out very isolated small fires and for smothering burning clothes.

5 FIRE WARDENS

Fire wardens have been allocated the responsibility of evacuating specific areas and will ensure their area is cleared before reporting to the control point. Your co-operation is essential, those failing to do so will be reported to the relevant linie manager.
After the alarm has been sounded, the University Rescue Team will take all necessary action in the event of a fire until the arrival of the Fire Brigade. On arrival, the Fire Brigade's senior officer present on the appliance will assume responsibility for dealing with the fire, but members of Faculty, Senior Technical Staff, and the person or persons responsible for the area in which the fire started must stay available to give advice to the Fire Brigade.

6 **Fire Drills**

Fire drills are held in all University buildings during the academic year. Any faults discovered during these drills, such as exit doors or fire alarms not operating correctly or problems with escape routes, should be reported immediately to the School Safety Adviser.

6 CONTROL AND ASSEMBLY POINTS

The control and assembly points are listed on the safety office web pages and posted on school safety notice boards. At these positions a Fire Marshal will await information from persons who have knowledge of the fire or incident, and floor wardens who will advise whether or not their areas of the building have been evacuated. The Rescue Team will report to the Control Point as will the Fire Service. First Aiders are asked to report to the control point in case there are casualties needing assistance. Remember that the sounding of fire alarms may have occurred because of an explosion or other serious incident - not necessarily a fire.

7 FIRST AID PROCEDURES

For most incidents the normal procedure to be followed is:-

a) For minor injuries Staff and students should ensure they are aware of the nearest location of first aid supplies. Even minor scratches should be washed thoroughly in cold running water before applying a plaster.

b) If the injury appears to be of a more serious nature, dial internal 3333 to summon mobile first aid assistance.

c) If it is obvious that an ambulance will be required, follow procedure b) and then request an ambulance, stating number of casualties and precise location.

For injuries involving chemicals, biological or radioactive materials

Seek the assistance of occupational first aiders who are on radio call by calling 3333.

IV GENERAL LABORATORY PRECAUTIONS

2 EYE PROTECTION

SAFETY GLASSES MUST BE WORN AT ALL TIMES IN ALL CHEMISTRY & BIOLOGICAL LABORATORIES AND ANY OTHER AREA WHERE THE BLUE MANDATORY NOTICE IS SHOWN ON THE DOOR.

Permanent Eye Protection Areas (PEPA's)
The areas within which eye protection must be worn at all times,
In areas which are not designated as PEPAs, eye protection should be worn as and when required by good laboratory practice as outlined by the risk assessment for the activity being undertaken.
Within a PEPA the type of eye protection worn must also be consistent with good practice as outlined by the activity risk assessment. Full eye protection, face shields and goggles, must be used when the process engaged in involves significant risk of splashing of corrosive materials, flying fragments etc.
The minimum level of protection permissible for any type of experimental work within a PEPA is wearing of safety spectacles conforming to BS2092.2. Ordinary sight-correcting spectacles afford basic protection against minor splashes etc. and represent the minimum level of protection for personnel passing through a low risk section of a PEPA, but not working there.

If prescription glasses are necessary these should be made in safety glass, or further protection worn as well, such as Pulsafe Armamax over spectacles. Safety prescription glasses should be inspected annually by a qualified optician.

These safety rules will be strictly enforced. The monthly safety inspections will pay particular attention to the wearing of eye protection by workers in PEPAs. Failure to comply will lead to exclusion from the laboratories.

3 APPARATUS AND SERVICES

a) Do not use apparatus without first reading instructions and then only if you understand its operation. Before using any apparatus or equipment refer to the safe working practices document for that lab/workshop and any project risk assessment for research equipment which must be produced by the lab/workshop supervisor.

a) Do not interfere with safety guards or electrical interlocks on apparatus.

b) Do not overload electrical supplies and ensure that appropriate fuses are fitted.

c) Use appropriate protective clothing (safety glasses, gloves, lab coats, etc.) where this is recommended.

d) Do not obstruct service controls, such as distribution boards, mains isolators, fire hoses and fuse gear.

e) Where possible avoid the use of trailing cables and in particular do not use portable fires or heaters in the laboratory. Radiant fires are prohibited in all University buildings.

f) It is forbidden to work alone with hazardous materials or machinery and every effort must be made to ensure that someone is within calling distance should an emergency arise.
See Safety Procedures and Guidance for working in University Buildings outside normal working hours SPG-11.

4 GLASSWARE

1 Toxicity of Chemicals

(i) Very few chemicals are completely harmless. They may cause damage if inhaled, ingested, enter through cuts or are absorbed through the intact skin.

(ii) To minimise inhalation fume cupboards should always be used for procedures in which toxic or harmful vapours, dusts or gases may be emitted.

(iii) Protection against contamination and ingestion depends mainly on good housekeeping. A safe system of work must be used to minimise risk.

2 Handling of Chemicals

(i) Try to use small quantities where danger may exist, especially if there is a risk of explosion.

(ii) **Pipetting by mouth is forbidden**. Alternative methods for filling pipettes and burettes must always be used. This applies to all liquids.

(iii) Safety glasses/face shield and appropriate skin protection (e.g. gloves and coat) must be worn when handling any chemicals. If ANY chemical (especially an acid or alkali) enters the eye this should be washed at once with a copious supply of sterile saline or tap water.

(iv) Care must always be taken in opening all bottles and drums. This is especially the case with un-labelled items. All unidentified chemicals must be treated as dangerous and suitable protective equipment must be used in handling such material.

(v) Always wash your hands after handling chemicals.

(vi) Refer to the laboratories hazard and risk assessment, this will include an assessment of the chemical toxicity to comply with the COSHH regulations and safe working practices before staring any work. This hazard and risk assessment should be produced by the Laboratory Supervisor or by individual researchers or technicians and approved by their supervisor. Ask to see it.

3 For Scheduled Chemicals

The University is obliged to record purchase of chemical that are precursors in the manufacture of drugs or chemical weapons. Indeed suppliers should not supply these goods unless a declaration from the University is submitted with the order
Members of faculty are responsible for the provision of safety advice and are responsible for the supervision of all work involving poisons in research and teaching situations for which they are responsible.

Ordering Procedure

Are to be found in
http://www.sussex.ac.uk/lifesci/documents/p10_procedure_for_category_1_and_2_substances.doc

4 Spillage of Chemicals

See SPG-32 Emergency Spills procedure

Everyone in the school who intends to work with biological agents, including blood samples, tissue samples and plant material must first discuss their proposed work with the University Health & Safety Office before bringing biological material into the school.

Advice on hazards and risks can be obtained from the University Health &Safety Office.

The Genetically Modified Organisms (Contained Use) Regulations 2000 require that anyone carrying out an activity involving genetic modification does so in conditions of contained use which satisfy the regulations. This includes carrying out a risk assessment for both human health and environmental protection and in some cases submitting a notification and requiring consent from the enforcing authority.

2 PRECAUTIONS IN THE USE OF ELECTRICITY

3 ULTRA-VIOLET RADIATION

Ultra-violet radiation lies in the band of wavelengths from 400-100nm. Ultra-violet quartz-halogen lamps are the most usual sources in the laboratories.
Short exposures from ultra-violet radiation can damage the eye or the skin and injury can result even if one does not look directly at the light. The energy is adsorbed in the outer layers of the eye and conjunctivitis results several hours after exposure, persisting for several days.

IX MACHINERY

All aspects of machinery must be controlled and used according to the SPG-02 *University Code of Practice for Workshop Equipment and Tools (Formally SSC-22-7).* In addition, managers and supervisors must ensure that all machinery and plant is, where appropriate, regularly inspected and efficiently maintained.

3 WELDING BRAZING AND CASTING

These practices can cause a risk of injury to the individual and others and must be carried out only in an area appropriate to the purpose.

To avoid eye damage, proper goggles or face shields must be worn by the welder and anyone else in the welding area. Sightscreens must be placed around the welder and in permanent welding booths; the walls must be painted with non-reflective paint. Welders must wear protective gloves.

Adequate local exhaust ventilation must be provided where welding or brazing is done. Toxic gases are liberated when lead, cadmium and many other materials are heated to welding, brazing or casting temperatures. Refer to sections of SPG-01 LEV and SPG-02 code of practice for workshops.

X PRESSURE & VACUUM SYSTEMS

1 HIGH PRESSURE SYSTEMS

Refer to the High Pressure Safety Code of Practice published by the High Pressure Technology Association, and the University Safety Procedures and Guidance SPG-35. New designs must be approved by the University Insurance Engineers before prototypes are made and tested. Regular inspection of pressure systems is vital to detect corrosion, fatigue and cracking, filter blockage or relief valve failure. In research areas the user should inspect his apparatus regularly

XII D.S.E. (DISPLAY SCREEN EQUIPMENT)/VDU'S (VISUAL DISPLAY UNIT'S)

Refer to the University Display Screen Equipment Policy and guidance on the Safety Office web pages.

XIII MANUAL HANDLING

A significant part of the work undertaken by technicians, porters and cleaners involves manual handling. There are risks of injury by the use of incorrect lifting methods or attempting to lift or move heavy or awkward loads. Refer to the University Safety Procedures and Guidance SPG-15.

Do not rush or take risks when moving loads, always assess the task before starting. Having assessed the task, get help if required and use the correct lifting equipment designed and provided for the purpose. If in doubt ask for help.

XIV SPECIAL HAZARDS

a) ASBESTOS: The discovery of any asbestos in the School must be reported to the School Safety Advisor. For handling and disposal of asbestos See Safety Policy and Local Rules for Work with Asbestos in University Buildings (SSC-48-3). To become SPG-07.

b) HUMAN or ANIMAL BLOOD or OTHER BODY FLUIDS and Tissue**:** Work undertaken with human or animal blood, blood products or tissue is governed by the University Safety Procedures and Guidance SPG-25 for Work with Human or Animal Blood Samples, Human or Animal Blood Products and other Specimens of Human or Animal Origin, Formally SSC-78-3. Contact the safety office before commencing work.

c) CARCINOGENS, MUTAGENS and TERATOGENS**:** See Safety Procedures and Guidnace for the Control and Use of Carcinogenic, Mutagenic and Teratogenic Substances SPG-10 (Formally SSC-60-1).

d) CENTRIFUGES: Those working with centrifuges must read and be familiar with the Safety Procedures and Guidance SPG-03 for the Safe Operation of Centrifuges (formally SSC-22-9).

e) ELECTROPHORESIS APPARATUS**:** Advice on the safe operation of electrophoresis apparatus is set out in the University Safety Procedures and Guidance for the Safe Operation of Electrophoresis Apparatus SPG-21(formally SSC-75-1). Supervisors should ensure that a suitable risk assessment is undertaken before experiments involving electrophoresis are undertaken. The School Electronics Workshop staff must approve the design of any new electrophoresis power packs or apparatus before they are bought into the School

f) GENETICALLY MODIFIED ORGANISMS**:** Managers, supervisors, research workers, University Safety Procedures and Guidance SPG-29 for the implementation of the Genetically Modified Organisms (Contained Use) Regulations (Formally (SSC-72-1). The Biological Safety Advisor must be consulted before introduction of any new material into the School or before embarking on experiments involving in vitro genetic manipulation

g) MICRO-ORGANISMS/HUMAN PATHOGENIC ORGANISMS**:** No dangerous pathogens (Advisory Group List A Pathogens) must be brought into University premises. Work with other pathogenic organisms must be approved by the University Biological Hazards Sub-Committee or, where genetically modified organisms are involved, by the Genetic Modification Safety Committee. See also Safety Procedures and Guidnace for the Control of Biological Agents SPG-24 (formally SSC-78-2).

h) SHARPS

General rules for using syringe/needle assemblies:

assume any human/animal tissues or products may harbour harmful substances;

needles should never be left uncapped on a surface or removed from a syringe, unless absolutely necessary;

needles should not be recapped prior to disposal (directly into a sharps container). This is when the majority of needle-stick injuries occur;

avoid generation of infectious aerosols unless appropriately contained

XV DISPOSAL OF WASTE

All waste materials must be disposed of in a safe manner.
See Safety Procedures and Guidance SPG-14Disposal of waste Chemicals and SPG-33 Non chemical/biological Waste
Also there are a number of other Safety Procedures and Guidance document which give details of disposal of specific wf04

List of University of Sussex Safety Policies.