

Division of Informatics Safety Handbook (JCMB)

This Divisional Safety Document is intended as a supplement to the University Health and Safety Policy, copies of which are available from the Divisional Safety Representative. Please read it and be aware of its contents at all times. It is, however, impossible for any such booklet to list every possible hazard. Ultimately, safety requires constant attention and must be the concern and responsibility of everyone. Any violation of the guidelines laid down in this Document may result in disciplinary action against the individual involved.

S.Anderson
October 1999

Divisional First Aiders

Mr D. Hamilton Room 1412 ext 505167 Mr E. McKenzie Room 2507 ext 505136

Mr G. Ellard Comp./Hall ext. 505160

Introduction

This handbook has been prepared on behalf of the Division of Computer Science and has been approved by the Head of Division as well as the University Director of Health and Safety. The views and help of members of technical staff have also been sought in order to establish sound working practice whilst complying with the Health and Safety at Work Act 1974 in conjunction with the current edition of the University Health and Safety Policy, available on the web at '<http://www.safety.ed.ac.uk/policy/>'. This handbook forms the safety policy for the Division of Informatics at JCMB. The handbook is reviewed each year when changes may be implemented to accommodate any changes to the Division's working environment or aquisition of any new equipment.

Deputy Head of Division	Dr. S.Anderson	Room 1610	Ext.505191
Divisional Safety Adviser	David Hamilton	Room 1412	Ext.505167
Servitors			Ext.508599
University Emergency Telephone Number			Ext.2222

Suggestions on any matter relating to Safety within the Division can be made at any time to the Head of Division or his Safety Representative.

Fire

On discovering a fire:

- Activate the nearest fire alarm.
- Leave the building.
- Do not use lifts.
- Do not stop to collect coats, handbags etc.
- Cyclists must NOT take their bicycle out with them.

In JCMB the fire services are called automatically when the alarm is activated at any point in the building.

There are appointed Fire Stewards for each area in the Division selected from Academic, Computing and Technical staff. They will check their respective areas and ensure that all have left the building. When requested by a Fire Steward to leave it is IMPERATIVE that you comply without hesitation.

There may be occasions when a very minor fire is encountered (e.g. fire in a waste bin), which may be dealt with using the fire extinguisher situated at the fire points. The incident should then be recorded in the appropriate incident book, held by the Division Safety Representative in room 1413.

Persons in wheelchairs require a special comment here. On hearing the alarm sound, if they are on level 1 or 2, they may proceed out as normal and no doubt will be assisted by others responding to the alarm. If they are higher in the building they should not attempt to leave but use the nearest telephone to contact the servitors box and give their location. The servitors will know the location of the “fire” and will advise the caller either to stay at his present location or instruct the caller to move to the other end of the building. If the caller is advised to move to a new location, the servitors must be contacted again and the new location given, along with the telephone number. An Emergency Team member will have in the meantime been delegated to join the person in the wheelchair and to remain with him or her until the Brigade arrive and take command of the situation. Remember, the servitor’s phone may well be engaged when you call but will only be so for short intervals and you must keep calling till contact is established.

Incidents

All INCIDENTS must be reported to the Divisional Safety Representative and will be entered in the appropriate Accident and Incident book held in room 1413.

It is important to report INCIDENTS (even when no injury is sustained) in order to enable remedial action to be taken and thus prevent ACCIDENTS in the future.

Accidents

ALL ACCIDENTS however minor must be reported to the Divisional Safety Representative and will be entered in the Accident and Incident book as well as in the DHSS book BI510 if appropriate. This is a legal requirement and it is essential that we comply with it.

Action to be taken in the event of an accident

- *Dial the emergency telephone number (2222) immediately*

Give the Security Officer your location (room number) and the nature of the accident and request the help of FIRST AIDERS; they will then direct the nearest First Aider to you. The First Aider will be able to take control of the situation, giving any necessary treatment and will also arrange for an ambulance if necessary.

The duty officer manning the emergency service has a specially prepared card with the location of all JCMB emergency team members clearly laid out on it and is able to contact First Aiders throughout the building when called upon to do so. This is the quickest way to get help in this building.

Warning Notices

If there is any equipment being constructed or tested in a room for which you are responsible, and which contains something which could constitute a hazard, it is necessary, in the interests of the safety of cleaners, nightwatchmen and security staff, to display a warning notice on the door of that room. The nature of any hazard must be displayed on the notice. e.g. EQUIPMENT UNDER CONSTRUCTION. The appropriate notice boards and mounting fixtures can be obtained from Physics Stores. See your Divisional Safety Representative.

It must be pointed out clearly that we are responsible under the 1974 Act to ensure the safety of ANY individual who may come into the proximity of working machinery or equipment in operation – *whether that individual is aware of the dangers or not.*

Hours of Access

Undergraduates and Msc students, must be clear of the JCM Building by the time the servitor goes off duty, (10 pm Mon. - Fri. and 7pm. Sat. & Sun.) unless holding a letter of authorisation from the Head of Division. Such letters may be issued to M.Sc. and Honours students of Computer Science who certify that they have read and understood the Divisional Safety Regulations. The building is open at 8am Mon. - Fri. and 9am Sat. & Sun.

The emergency team is not available after normal working hours although the emergency telephone number is still effective. Since it alerts security staff who are on radio call but may be remote from JCMB, it must be understood there may be some delay in getting help. When in the Division after normal hours, it is a requirement and in the interests of your own safety to sign in and out at the servitors' box.

Supervisors

Supervisors are responsible for identifying any hazards associated with the work which those students under their care may be doing and for identifying any risks to the Health and Safety of students which may arise from any such hazard. Supervisors are also responsible for defining how such risks may be controlled.

General Rules of Safety

The Head of the Division of Computer Science is responsible for ensuring that the staff and students work under safe conditions. All staff and students must understand safety procedures and use them in the course of their work. The Computer Science Division shares the JCMB with several other Divisions and must show consideration for the safety of staff and students of these Divisions and indeed for all visitors to the building.

Some of the Divisions with which we share the building have equipment which is rather more hazardous than ours; we must therefore take seriously any emergency which may arise. If called upon to vacate the building, do so immediately.

Never run in the corridors. The unfortunate design of the smoke doors is such that it is difficult to see anyone approaching from the other side and if a door is pushed violently open, someone could be injured.

When the fire siren sounds, leave the building by the shortest safe corridor and staircase route. Remain outwith the building until officially authorised to re-enter by a member of the emergency team. In the event of encountering smoke in the corridor, go to a fire exit in the opposite direction, making sure that the smoke doors are closing behind you. Do NOT use the lifts.

Never wedge open the smoke doors; ensure that they close properly after you. Any faulty door-closing equipment should be reported immediately to the servitors, Ext.508599.

It is necessary for staff and students using the computer halls to know the locations of fire extinguishers and emergency exits, Fire Alarm 'break glass points' and Emergency Stop buttons. These are all clearly marked.

There are CO₂ extinguishers in both computer halls and electronic workshops. There are water and CO₂ extinguishers in all corridors. Water extinguishers must NOT be used on an electrical fire. There are first aid boxes with free access in both computer halls, both the electronic and project laboratories (1507 and 1512) and the mechanical workshop (Room 1407). There is also a central Building First Aid Box held by the servitors. These are kept stocked and inspected regularly.

Untidiness in the workplace is one of the most common causes of accidents. Passageways between benches must be kept clear and floor space kept clear allowing easy access and easy exit in the event of an emergency. Emergency exits must never be obstructed. Obstructive items such as equipment or packing must never be placed in emergency passageways.

Dust coats are provided for technical staff for their protection and also for the cleanliness of their clothes. A good dustcoat can prevent a nasty burn and is also useful in restraining loose clothing when machining. Dustcoats must not

be worn in coffee rooms or in the food halls.

Soldering irons represent a fire hazard, as well as possibly burning someone. All irons used must have a proper holder and must be returned to this holder when not in use.

All electrical equipment used in this Division is tested annually, using an approved Portable Appliance Tester, and labelled accordingly showing the date of test and the tester's signature. This information is kept in a Safety log and is available for inspection by the Health and Safety Executive in keeping with the Electricity at Work Regulations, 1989. Any personal article brought into the Division which is powered by mains electricity MUST be presented to the Technicians to be properly tested and labelled as safe before it may be connected to the supply. Heaters can be supplied by the Division for those who work late in the evening; application should be made to via Support (support@dcs.ed.ac.uk).

Computing Equipment Areas

Eating, drinking are prohibited in all computer halls and in terminal, plotter and printer rooms.

The only persons allowed to lift floor tiles in the computer halls are the technical staff and any other staff specifically authorised by the Head of Division or his Safety Representative. These people will be aware of the risks of injury and also the position of fire alarm sensors. Any area of floor with the tiles removed must be guarded by a suitable barrier.

These rooms must be kept tidy in order to prevent any loose cables from equipment presenting a tripping hazard.

The Central Services area in the South Computer Hall is a Restricted Area. No-one other than computing staff directly involved with the operation of equipment in this area is allowed entry.

Power to the various areas and workshops within the Computer Halls is supplied and controlled by the wall mounted Power Distribution Units. (PDU's.) ONLY technical staff and specific authorised staff are permitted to operate the Power ON switch on any of these units. The Emergency Stop button may be operated by anyone in an emergency situation.

Card Entry System

There are 8 doors within the Division controlled by card entry. These are as follows:

- 1206 - Main entrance east
- 1206 - Main entrance west
- 1305 - Server area
- 2501 - Terminal Room
- 1507 - Laboratory
- 1512 - Laboratory
- 2419 - Copier Room
- 1619 - Copier Room

2419 and 1619 are open during normal working hours (9.00am to 6.00pm Monday to Friday) but a card is required for entry outwith these hours, all others require card entry at all times. In the event of a power failure doors will continue on backup power for a short while then open. Should any fault occur, this should be reported to faults@dcs.ed.ac.uk. A card is kept in the servitors' box which will operate any door but these are for use by the Emergency Services ONLY.

Offices and Workrooms

A hazardous situation can arise as a result of damaged cables to desk lamps, heaters, typewriters, VDU's, Computers etc. Ensure that all cables are kept free from chairs, filing cabinets etc. in order to prevent them from being damaged or having the plug connections pulled loose. Report any damage to faults@dcs.ed.ac.uk immediately.

Rooms must be kept tidy in order to prevent any loose cables from equipment presenting a tripping hazard. All electrical office equipment including heaters, typewriters, desk lamps and VDU's must be switched OFF when the office is vacated. However it is understood that there will be equipment such as workstations which are networked and may not be switched off.

It is unsafe to stand on desks, chairs, books, etc. in order to reach a top shelf in the wall cupboards. Only a proper stable step should be used. Never stand on a swivel chair.

It is important to ensure that four drawer filing cabinets are not top heavy and will not tip forward when the top drawer is pulled fully out.

Care is also called for in offices where the occupants have plants which need to be watered and cared for. The unfortunate design of many of our offices has resulted in the power points being positioned by the window, on the floor, where plants would normally be placed. Please be very careful when watering and ensure that there is no spillage and that water cannot get into the power points thus causing a very real hazard.

It is important to ensure that food and drinks are not allowed to come into close proximity to any electrical or electronic equipment.

Copier and printer rooms 2419 and 1619 are special areas delegated to document production and have special environment control. The reason for this is that the laser printers and copiers in those rooms give off ozone. In order to prevent the amount of ozone exceeding the safe permitted level, ventilation fans bring in fresh air and vent the ozone enriched air to the atmosphere where it is quickly and harmlessly dispersed. These fans must NEVER be switched off.

Working with VDU's

The Visual Display Unit, (VDU) has now become common place equipment in the workplace, whether in office or factory or even in the home. VDU's are of course common place in this Division and are subject to specific legislation regarding their use. The term VDU refers to any piece of equipment in use which has a display screen which the user looks at and also a keyboard which the user types on to interact with the System or Computer. Since working with a VDU has now become a significant part of our daily life, it is essential that we adopt a careful attitude to the work environment in which this equipment is situated. The Division has sought professional advice on this matter and the following comments are offered to assist users to develop working practices designed to avoid the problem of Repetative Strain Injury.(R.S.I.)

- Adjust your chair and VDU to find the most comfortable position for your work. Your arms should be approximately horizontal when in the typing position and the screen should be approximately at eye level.
- Adjust the chair height and position to give you good lumbar support and minimum pressure on the back of your thighs, a suitable footrest may be necessary to accomplish this.

- Make sure that the space beneath your desk is clear giving you complete freedom of positioning for your feet.
- Take care that you do not remain in the same position for excessive periods of time. You should occasionally lean back and stretch your shoulders, thereby relieving lumbar tension. This has the effect of stretching the pectoral muscles and lifting the rib cage, enhancing lung function.
- At least once an hour you should stand up and leave your VDU, move around a little, normal spinal curves will be re-assumed in the standing position. In addition, by moving about the room or Division, both respiratory and cardiac function will be enhanced, reducing the possibility of mental and physical fatigue.
- Adjust your keyboard and screen to give the best keying and viewing position, there should be a space in front of your keyboard on which to rest your hands.
- Do not bend your hands up at the wrists when keying, good keyboard technique will probably be one of the most valuable assets you could acquire. The use of all fingers distributes the stress on all the tendons of both hands rather than only those servicing the index fingers.
- Try changing from time to time the layout of keyboard, screen and document holder, this will reduce the possibility of you settling into a rigid head and neck position. When changing your layout see that you change the mouse to be operated by the other hand, so that you are not always turning your head and upper back to the same side.
- The screen should be positioned to minimise the effect of glare from lights or windows, use blinds where necessary. You should not be facing directly at a window or bright lights.
- Adjust the brightness of the screen to make the display easily visible.
- If your screen is “swimming” or flickering you must report it immediately by mail to faults@dcs

Electrical Hazards

See also Part 3 of the University Health and Safety Policy - Electrical Equipment.

In this Division, committed to working with and constructing electronic equipment, it must be recognised that the main hazard is one of electrical shock or burns.

Students are not permitted to work alone in laboratories.

Trained staff working with equipment with exposed mains or EHT voltages must ensure that there is at least one other person present.

The primary cause of injury or death is the passage of electric current through the body. Consequential injury, possibly severe, can result from violent muscle reaction to the current.

The current can be supplied from a number of different sources 240V AC; DC supplies; EHT voltages. Someone electrocuted and still attached to a supply is still 'live'.

Current over 10mA passing through the body is painful; current in excess of 100mA passing through the body is lethal.

The amount of current passed through the body is determined by the points of contact, the voltage applied and the skin condition (moist or dry). Skin resistance may vary from under 1000 ohms for wet skin to 500Kohms for dry skin.

Death has been caused by as little as 40 Volts.

Students in this Division are not allowed to have access to equipment with exposed voltages of over 30 Volts.

Students are not permitted entrance to the electronic workshops (where technical staff may be working with equipment with exposed mains and EHT voltages) unless approval has been obtained from the Head of Division or his authorised representative.

The Electrical Switchroom in the North Computer Hall is OUT OF BOUNDS to all students. In the event of the Main Supply dropping out for any reason, ONLY specific authorised personnel are allowed to re-apply power. In the event of a power failure outwith normal working hours the appropriate person should be contacted using the Emergency Duty Roster which is mounted in the servitors' box. This must be done in conjunction with the Work's Division electrician who is responsible for the Machine Hall ventilation equipment, which will also

have tripped out. The duty servitor or security officer will make the necessary telephone calls.

Safe working procedures must be aimed towards not contacting any live electrical conductor. In practical terms the following points should be noted:

- Do not attempt to modify or service electrical equipment unless it is disconnected from the supply or you are working under the supervision of trained personnel.
- Live electrical terminals must be shielded.
- Always ensure that electrical earths are continuous; connection to a chassis must be clean and checked.
- Temporary connections made for experimental reasons must be safe and properly insulated. Permanent connections should be made as soon as possible.
- Fuses of the correct rating must be fitted to all electrical equipment.
- Three Phase supply connections are the responsibility of the Works Division and should only be made by the Works Division Electricians; they should be permanent connections.
- Electrical isolators have a live side even in the switched off position – be aware of the danger.
- Single pole switches, if used, must be on the ‘live’ side of the supply; always use double pole switches if at all possible.
- High current supplies can, in addition to the electrical hazard, give rise to arcing which can cause fire, electrical burns and ultra violet radiation, exercise care if wearing rings or metal chains.
- Disconnect high current supplies only when power is switched OFF.
- Always work with dry hands, standing on a dry floor, in a dry environment.
- The outer cover of any mains cable must always be securely held by the cable grips on the plug.

One of the main problems for technical staff working with electricity is *over-familiarity*. It is very easy to become so used to handling electrical and electronic circuitry that one *loses the awareness* of the potential dangers involved. One might be working on a piece of TTL circuitry, exposed to nothing more harmful than 5 volts, where you can have your hands all over the components with impunity, then change to a VDU where you may be exposed to 20 K/Volts. ALWAYS be alert to the danger and *possibility of injury* should you touch a high voltage conductor. Develop a sense of Safety Consciousness regarding electricity.

Mechanical Hazards

See also Part 4 of the University Health and Safety Policy - Mechanical Equipment.

Within the Mechanical Workshop, Room 1407, there are various hazards from rotating machinery, grindwheels, hand-held drilling machines, saws and cutting tools, guillotine, bending and punching tools etc.

As with all engineering equipment the prime rule of safety within a mechanical workshop is that of good housekeeping and general tidiness.

Students are not permitted entrance to the mechanical workshop, Room 1407, unless approval has been obtained from the Head of Division or his authorised representative.

The Health and Safety Act requires certain standards of safety for all mechanical equipment and the following notes are aimed at providing the correct safe working procedure:

1. Do not operate a machine if you are wearing loose clothing – button up shirt sleeves or overalls. If you have long hair you must wear the protective cap which is provided and which should be left in the workshop. Members of staff who have long hair and expect to use the mechanical workshop can acquire a personal cap from the Safety Representative.
2. Always ensure that machine guards are fitted and in position when operating machinery. It is illegal to remove guards from a machine without a very good reason. Belt guards and motor guards must always be replaced if they have been removed for servicing.
3. Always use clamps to hold a workpiece in the drilling machine table. Do not attempt to hold the workpiece by hand. Brass is particularly liable to seize on the drillbit unless the correct type of bit is used and the bit kept sharp. Get advice from trained technical staff if you are at anytime unsure. *Do not take risks*. Return all drillbits to their proper holder.
4. Do not use handtools of the wrong size and ensure that the handtool (whether spanner or screwdriver etc.) fits the work correctly.
5. Never use handfiles unless they have a proper handle fitted. The pointed tang of a file can slip and pierce the palm of the hand.
6. Ensure that hand cutting tools are sharp – a blunt handtool will slip easily and can cause injury. When using a handtool remember to apply the force for cutting or filing in a direction *away* from the body.
7. Keep machine tools, workbenches and surrounding areas clean of loose metal swarf and chippings.

8. If the machining operation requires you to do so, (e.g. drilling, grinding a tool) always use safety glasses to the appropriate British Standard (BS2092) specification as well as the machine guard.
9. Abrasive grindwheels can cause serious eye injuries due to grit being thrown from the grindwheel – wear appropriate eye protection. Grinding wheels are subject to additional legislation and must only be mounted and adjusted by a trained workshop technician who has attended the university instruction course for such an operation.
10. Use hoisting and lifting equipment held in Physics stores when moving heavy weights around. Make sure that slings are correctly placed. If you are unsure, ask and do not take risks.
11. The circular saw in the Physics stores is available to certain approved technical staff in this Division. This saw must be used in accordance with the Woodworking Machines Regulations 1974, to be found on the wall in the area of the saw.
12. Always ensure that when you leave a machine or piece of equipment that it is in a safe condition for the next person to approach and use.

Finally, if you are in doubt about the operating procedures of any piece of mechanical equipment, find out before you switch it on, or attempt to use it, otherwise damage may be caused to the equipment or injury to yourself or some other person who may happen to be in the vicinity at that time.