

UNIVERSITY OF ABERDEEN  
SCHOOL OF ENGINEERING

# SAFETY HANDBOOK

2012

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## **Statement of School Health and Safety Policy**

The University Health and Safety Policy is set out in the document of this name approved by the Operating Board in 2010. The following School Policy supplements the University Policy.

The School of Engineering is committed to the achievement of excellence in our research and teaching activities. Accidents are disruptive, they use up resources which could be put to better use and they can hinder the achievement of our objectives as well as threatening the well-being of staff and students. Our commitment to excellence therefore includes a commitment to the effective management of health and safety.

The School has to satisfy the requirements of Health and Safety legislation as well as the requirements of the University Court (as set out in the University Health and Safety Policy). This handbook describes our arrangements for doing this. Your attention is drawn, in particular, to the section of the Handbook describing our organisational arrangements. In the School Health and Safety is a line management responsibility. This means that all members of staff who have people working for them and/or who control activities in the School, have responsibilities for ensuring health and safety in all matters under their control. I also draw your attention to a statement from the University Court:

*Students on leaving the University should have an attitude of mind which expects good health and safety practice to be normal procedure. This will only occur if University staff set high standards by personal example and by ensuring that safe practice is routine.*

Risk assessment will be fundamental to the way in which we manage health and safety. This process of systematically identifying areas of significant risk and determining what risk reduction measures are required will form an integral part of all our activities.

Staff and students must acquire the skills necessary to enable them to work safely and to satisfy the requirements of the School's Health and Safety Policy. We will therefore provide staff and students with necessary health and safety training.

At least three times each year inspections of the School's activities will be undertaken to evaluate the extent of compliance with the arrangements described in this handbook. The findings of the inspections will be reviewed at each meeting of the School Safety Committee and any recommendations implemented.

Our systems and procedures can always be improved and I encourage any student or member of staff who has suggestions for making our health and safety arrangements more effective to contact the School Safety Adviser with his or her ideas.

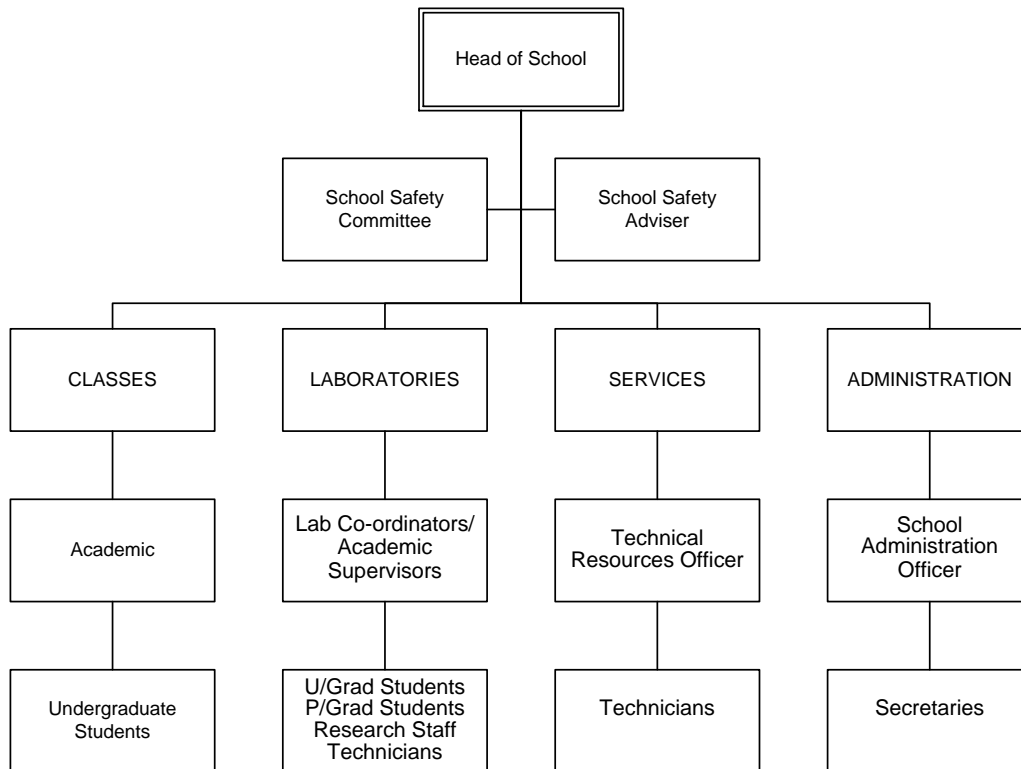
**PROFESSOR T. O'DONOGHUE**

Head of School

# **1. POLICY AND ARRANGEMENTS**

## **1.1 HEALTH AND SAFETY ORGANISATION**

### **1.1.1 Lines of Responsibility for Health and Safety**



### **1.1.2 Overview**

The Head of School has ultimate responsibility for health and safety in the School. In the School (as everywhere in the University) Health and Safety is a line management responsibility. Accordingly members of the School with managerial and supervisory duties must take full responsibility for health and safety in all activities under their control. In particular, they must ensure that staff and students under their control are aware of the dangers in the tasks which they undertake and are able to implement appropriate precautions. They must ensure that staff and students are provided with necessary training and supervision.

### **1.1.3 Responsibilities:**

#### **Responsibilities of the Head of School**

The Head of School will:

- Provide an effective Health and Safety Policy for the School.
- Ensure the provision of resources necessary to enable the policy to be implemented.
- Convene the School's Health and Safety Committee.

### **Responsibilities of Staff in a Supervisory Role**

Professors, Lecturers, Managers and Supervisors who supervise staff or students are responsible for implementing the Policy in their areas of control.

In implementing the Policy they will:

- Ensure that all hazards creating significant risks are identified and that necessary steps are taken to reduce the risks to acceptable levels.
- Ensure that necessary health and safety training is provided for all staff and students in their areas of control.
- Ensure that necessary supervision is provided for all staff and students in their areas of control.
- Ensure that all premises, plant, equipment and vehicles in their area of control are maintained in an acceptable condition.
- Make arrangements to monitor whether staff and students in their areas of control are complying with the School's health and safety arrangements.

### **Responsibilities for Technical Staff**

The line manager for technical staff is the Technical Resources Officer. However, when working in research laboratories, in the field or helping with teaching classes, technicians come under the control of members of the academic staff who will take responsibility for their health and safety. Any ambiguities as regards responsibilities for the health and safety of technicians in particular circumstances should be resolved by discussions between the academic staff concerned and the Technical Resources Officer. The technicians concerned should be made aware of the outcomes of any discussions.

### **Responsibilities of all staff and students**

All staff and students must:

- Co-operate and comply with the health and safety arrangements put in place by the School.
- Do what they can to make sure that their activities do not cause harm to others.
- If they see or become aware of something which they believe is unsafe, either take immediate steps to make it safe or alternatively bring it to the attention of their immediate supervisor, the School safety Adviser or the TRO who will effect the necessary action.
- If they become aware of any deficiencies in the School's Health and Safety arrangements, bring those deficiencies to the attention of their immediate supervisor.
- Not interfere with, or misuse, anything which is provided for reasons of Health and Safety.

### **Responsibilities of the School Safety Adviser**

The School Safety Adviser will provide advice to the Head of School and to all members of the School on health and safety matters.

### **Responsibilities of Laboratory Co-ordinators**

As addition to the responsibilities detailed in 1.3.2, Laboratory co-ordinators are responsible for:

- Ensuring Laboratory Inductions are carried out.
- Providing a written set of Local Safety Rules and Procedures which covers all regular operations within the laboratory. In the case of smaller single purpose laboratories a comprehensive risk assessment is all that is necessary.

#### **1.1.4 Arrangements for dealing with health and safety concerns**

It is expected that Health and Safety problems will be resolved by discussions within the School. An individual member of staff or student with a concern about a Health and Safety matter should discuss it initially with his/her line manager/supervisor or with the School Safety Adviser. If the matter is not resolved in this way it should be brought to the attention of the Head of School.

#### **1.1.5 School Safety Committee**

The Committee will meet at least once per term to:

- Review the health and safety arrangements of the School and make recommendations on steps to be taken to ensure that effectiveness of the School's health and safety policy.
- Provide a forum for discussion of health and safety matters raised by members of the committee or raised by staff/students through committee members.
- Produce minutes of its meetings in a timely manner and publish them on the School's intranet.

Particular matters that the Committee should consider include:

- Reports of health and safety inspections of the School.
- Reports of all accidents and near misses.
- The adequacy of the School's arrangements for risk assessment.
- The health and safety content of training for staff and students.
- Health and safety information produced for staff and students and how it is communicated.

If any student or member of staff has a matter they wish the Committee to discuss they should contact one of the members of the Committee.

#### **1.1.6 Health And Safety Inspections**

The School will undertake health and safety inspections of the School's activities prior to each meeting of the Health and Safety Committee. The inspection team will produce a report which will include:

- Positive findings, as well as details of the location and significance of any failings discovered.
- Recommendations for remedial action (including timescale and priorities).
- Suggestions as to who should carry out particular remedial actions.

(The reporting process should not delay remedial measures or prevent immediate action during the inspection if there is a risk of serious injury or ill health.) The Head of School will confirm the suggested remedial action.

Follow up inspections will be arranged specifically to ensure that any necessary remedial action has been taken and is effective.

### **1.1.7 Review of the Safety Handbook**

Each year the handbook will be revised and reissued after the annual review of the School's health and safety arrangements by the School Safety Committee.

## **1.2 FIRE SAFETY PRECAUTIONS**

Fire is probably the greatest single safety related threat to the School and to members of the School. Even if everyone were to escape safely from the building, a fire could destroy our facilities and all our documents and data. It is important therefore that we do as much as we can to prevent a fire starting. If despite our best efforts a fire should start, a fast and effective response can help save life and property.

Copies of the yellow University "In event of Fire" notices are posted throughout the building to provide instruction for staff and visitors.

The assembly point for the Fraser Noble Building is outside the north entrance to the Meston Building.

### **1.2.1 Fire prevention**

To reduce the risk of fire you should:

- Store highly flammable liquids in flammable cabinets.
- Avoid large accumulations of material which might easily burn (e.g. waste paper, cardboard, plastics).
- not obstruct the ventilation of electrical equipment or place material immediately above or close to electric heaters. Radiant electric heaters are prohibited.
- not overload electrical sockets by connecting too many appliances to a single socket.

### **1.2.2 Building Evacuation**

#### **DO NOT USE LIFTS IN THE EVENT OF AN ALARM**

Safe evacuation requires everyone to act in a responsible manner and to offer relevant assistance as circumstances demand.

Corridors and escape routes must be kept clear. Combustible materials should not be stored in corridors or on escape routes where they could become a source of fire and smoke.

Furniture and other items should not be placed so they partially block escape routes. Narrowing of escape routes will reduce the rate at which people can leave the building in an emergency. In a corridor filled with smoke, furniture can create a serious obstacle for someone who is trying to find their way out.

Fire doors can have a very significant effect in preventing the spread of smoke and fire through a building and make it easier for people to escape. It is extremely important that FIRE DOORS ARE KEPT CLOSED and not wedged open. Any fire

door fitted with a door closing device should not be wedged open and the area around it kept clear to allow it close in the event of an alarm.

**1.2.3 On discovering a fire**

If you discover a fire, it is important to take the following steps in the order given:

- 1) Sound the alarm (No fire is so small that the alarm does not need to be sounded. A fire extinguisher should not be discharged onto a fire until the alarm has been sounded.)
- 2) Get someone to call the fire brigade by dialling 9-999.
- 3) Warn others in the area (Shout “fire” and bang on doors - some people do not always respond immediately to fire alarms).
- 4) Only if you can do so without putting your own safety at risk, attempt to fight the fire with a suitable extinguisher.
- 5) Otherwise, close the door to the area where the fire is (to contain the fire) and leave the building and await the arrival of the fire brigade.
- 6) At the assembly point (shown on the fire notices), report to the person in charge. They will be identified by wearing a high visibility jacket. Provide them with information about what has happened.

**1.2.4 On hearing the fire alarm**

If you hear the fire alarm:

- 1) Check the rooms and laboratories near to yours, if you can, to ensure the occupants have heard the alarm and have left.
- 2) Leave the building by the nearest exit and go to the assembly point shown on the fire notices.
- 3) Anyone teaching or supervising groups of students should ensure that all the students leave the building by the nearest exit and go to the assembly point.
- 4) If you have any information about someone who might be still in the building, report to the person in charge. They will be identified by wearing a high visibility jacket.

**Note: Do not re-enter the building until the fire alarm has been silenced.** If necessary call Ext 3939 (24 hour Estates number) to request attendance from an electrician to silence

**1.2.5 Extinguishers**

There are four main types of extinguisher used in the University. The applications for which they are suited are summarised below:

|   | <b>Water</b> | <b>Foam</b> | <b>Carbon Dioxide</b> | <b>Dry Powder</b> |
|---|--------------|-------------|-----------------------|-------------------|
| <b>Wood, paper textiles etc.</b>                        | ✓            | ✓           |                       | ✓                 |
| <b>Organic solvents, petrol, oil, fats, paints etc.</b> |              | ✓           | ✓                     | ✓                 |
| <b>Fires associated with electrical hazards</b>         |              |             | ✓                     | ✓                 |

Water must **never** be used on burning liquids or electrical equipment.

Normal foam is not effective on fires involving alcohols. Special types of foam are needed.

Special extinguishers are required for fires involving a burning metal. The type of extinguisher depends on the metal involved.

All extinguishers are checked annually by a company contracted by the Estates Section. The date of last inspection is shown on the extinguisher.

### **1.2.6 Fire drills and alarm tests**

Fire drills are held in the School at least once each year to enable us to test the efficiency of our fire evacuation arrangements.

The fire alarms are tested for about 10 seconds every Wednesday at 10.00 a.m. in the Meston Building and every Wednesday at 10.15 a.m. in the Fraser Noble Building. If the alarm is heard at any other time, or if it rings for a period longer than about 10 seconds at any time, it must be assumed that a fire has occurred. The building must then be evacuated.

### **1.3 FIRST AID**

First Aid arrangements in the School are co-ordinated by the School Safety Adviser. He will ensure that there are an adequate number of qualified first aiders among the staff in the School and that notices are posted stating who they are.

A full set of first aid materials is maintained in the First Aid Room. Many laboratories retain boxes of plasters for minor cuts.

The First Aid Room is located in the ground floor room 068.

### **1.4 HEALTH AND SAFETY TRAINING**

The provision of health and safety training is an important part of the School's Health and Safety Management System.

All new staff and postgraduates will be given a **basic safety induction** during the first few days of their employment. It is the responsibility of the individuals line manager to ensure that training is provided.

**All** persons using laboratory space and facilities for research or project work **must** complete a **laboratory induction form** supervised by the Senior Laboratory Technician. Laboratory work may be undertaken by an individual only after he or she has read any **Local Safety Rules and Procedures**, understood and accepted the working protocols prescribed by the Laboratory Coordinator/ Senior Laboratory Technician for the laboratory in question.

All postgraduate student supervisors are responsible for ensuring that students carrying out laboratory based research work receive training if required in laboratory safety.

### **1.5 ACCIDENT INVESTIGATION AND REPORTING**

Accidents and 'near misses' must be reported as soon as possible. This can be done either on-line at <http://www.abdn.ac.uk/safety/general/accidents/> or forms are available from TRO. The report must be completed by the immediate supervisor of

the injured person or the person in charge of the area where the incident happened (and not by the injured person). A copy of the completed form must be sent to the University safety Adviser within 48 hours.

The following must be reported:

- Any incident in which anyone is hurt (regardless of how minor the injury might appear at the time and regardless of whether they need medical treatment).
- Any incident in which someone could have been hurt (but in which perhaps chance or “good luck” prevented injury). These incidents are sometimes referred to as near-misses.

There are several reasons for reporting accidents. The most important is to enable us to take action to prevent a similar accident happening in the future (perhaps with more severe consequences). We may also need to report the incident to the Health and Safety Executive or to our insurers.

### **1.6 RISK ASSESSMENT**

It is incumbent on every member of staff, academic, technical or administrative, to ensure that they (and those they supervise or manage) are working in a safe environment and adopting sensible working practices in performing their duties. To this end staff should carry out regular risk assessments, whether these be informal and unrecorded or by the more formal documented procedures (outlined below), to maintain safe working practices and implement control of hazards.

The School has prepared a Risk Assessment template (see appendices), available electronically from [www.abdn.ac.uk/engineering/about/safety.php](http://www.abdn.ac.uk/engineering/about/safety.php), which should be used as a model and guide for undertaking an assessment (this template is not appropriate for undergraduate practicals – see section 6.3). The template gives guidance on how to conduct a sensible risk assessment, examples of *some* of the hazards which may be presents and a list of tasks to be carried out. The template should be used for all but the most routine of assessments.

It is important that staff, whether supervising students or not, should not lose sight of the purpose of the risk assessment. Its purpose is not to produce a completed “form” which then can be placed on one side and forgotten about. It is to reduce the potential for injury in the laboratory and in the field. The work should be discussed in sufficient detail and enough committed to writing to achieve this purpose.

Risk assessment is the process of:

- identifying where there is a significant risk (i.e. danger) in an activity and
- determining how that risk can be reduced to an acceptable level (i.e. working out how the activity can be carried out safely).

The carrying out of risk assessments is fundamental to the effective management of health and safety. If we do not first identify how people might be hurt we cannot then take steps to prevent them being hurt. The School is obliged by law to ensure that risk assessments are carried out. There is also a legal requirement to record the “*significant findings*” of risk assessment in writing. The “*significant findings*” are the precautions which need to be taken when carrying out particular activities. It is the

responsibility of all members of staff and students to carry through these processes where appropriate.

A good risk assessment is one which concentrates on the main hazards (and ignores the trivial ones) and records the “significant findings” in a way which will help those involved in the work to carry it out safely.

### **1.6.1 The School’s approach to risk assessment and hazard control**

We approach risk assessment and hazard control in the School on three different levels:

- 1) The significant findings of risk assessments for frequently repeated tasks which form part of the routine operation of our laboratories, workshops, offices and other facilities are either already recorded in this handbook or in any Local Safety Rules and Procedures. It is the responsibility of laboratory/work area co-ordinators to ensure that sections relating to their work are accurate and up-to-date. Any changes should be communicated in writing to the School Safety Adviser.
- 2) Where written procedures exist for particular scientific/engineering processes or operations, the significant findings of the risk assessments will be recorded as part of those written procedures. For example:
  - Procedures for an analytical process should include details of how the task should be carried out safely if, without those details, the people carrying out the task would not be certain of the health and safety precautions they should take.
  - Procedures for the operation of a piece of scientific equipment, machine or test rig/facility should include details of how to operate the equipment/facility safely if, without those details, the people operating the equipment might not know how to do so safely.

These procedures should be displayed prominently in the laboratory or work area to which they refer. If they relate to equipment operation then they should be close to the equipment. The laboratory/work area co-ordinators should ensure that these procedures are accurate and up-to-date and that personnel using the facility are aware of the procedures. Any changes to procedures should be discussed with the School Safety Adviser.

- 3) For those activities not covered by 1) or 2) above, a separate risk assessment should be carried out. Normally, the findings of the assessment should be recorded in writing.

### **1.6.2 Risk assessment in undergraduate practical work**

Written procedures for undergraduate practical work should always begin by identifying the hazards and main dangers associated with the work and the precautions which are to be employed. Details of the precautions should be included at the appropriate stage in the method. If the practical has been devised such that there are no significant dangers associated with it, a statement to that effect should be made at the start of the method. The risk assessment template is not appropriate for use with undergraduate practical work.

### **1.6.3 Risk assessment in postgraduate work and undergraduate projects**

Risk assessments for research work in the laboratory or in the field involving postgraduate or undergraduate students must follow this method for risk assessment.

Supervisors of students are responsible for ensuring it is followed. The purpose is to ensure that students:

- appreciate where the hazards and possible dangers lie in the work they are about to undertake, and
- understand in sufficient detail the precautions which will need to be taken to ensure that the work is carried out safely.

Supervisors are responsible for deciding to what extent necessary precautions should be committed to writing. For example, it is likely that more detail will need to be recorded for work to be carried out by a new postgraduate compared with that which will be needed for similar work which is to be carried out by a third year postgraduate.

- Student and supervisor should meet before the work begins and systematically examine the hazards and possible dangers associated with the work and discuss the techniques available to enable the work to be carried out safely. The School's risk assessment template, guidelines and checklist for risk assessment (see Appendices ) should be used as the basis of this discussion. The supervisor should ensure that the student is aware of the sections of the School Safety Handbook which are appropriate to the work as well as any other documents with relevant health and safety content.
- The student should prepare an appropriate risk assessment based on the template. This assessment should incorporate a summary of the hazards and potential dangers of the work and the precautions or control measures which are deemed to be necessary to enable the work to be carried out safely: these are the so-called "significant findings" of the risk assessment.
- The supervisor should provide guidance on the level of detail required commensurate with the experience and skill of the student and the complexity and likely hazards associated with the work.
- The supervisor should review the written record of the assessment. When satisfied with the detail, accuracy and relevance of the assessment, the supervisor should sign the record (either on the form or in the student's notebook) before the work can begin. The supervisor should keep a copy of the risk assessment.
- The student should keep a copy of the risk assessment or record it in his/her laboratory notebook. The record must be retained by the student for as long as the work to which it relates continues. The record must be produced if required during School health and safety inspections.
- The student must understand that significant alterations in the agreed procedure must not be introduced without the supervisor's knowledge. Student and supervisor should meet regularly to confirm that the risk assessment is still valid. If there are significant changes to the work, the written assessment must be revised and the record of the revised assessment must be reviewed and signed by the supervisor.

#### **1.6.4 Risk assessment when work involves primarily staff**

For work involving mainly staff (academic, technical and administrative), those involved (or the most senior in terms of line management) should carry out appropriate risk assessments and implement suitable control and precautionary methods. Depending on the level of risk and nature of the hazards, the supervisor

should decide whether informal action and recording is sufficient or a full documented assessment needs to be carried out.

### **1.7 OUT OF HOURS LABORATORY WORK**

The normal working hours of the School are between 8.00 and 18.00 hours, Monday to Friday. Outside these hours there is restricted access to the School buildings and facilities.

In exceptional circumstances, for example if equipment is rationed or for a legitimate experimental procedure, it may be necessary to conduct laboratory based work outside of normal working hours. The following protocol identifies the steps required before out of hours working can be undertaken.

**In all cases the risk assessments must include out of hours working and appropriate supervision must be set in place. No lone working is permitted other than for the most menial of tasks such as data processing.**

**Post-graduate students and research staff** must obtain permission from their supervisors.

**Under-graduate students** will not normally be permitted to undertake laboratory procedures outside of normal hours. If, after following the protocol below, an undergraduate receives permission to work in a laboratory out of hours it will be incumbent on the academic supervisor to provide adequate supervision throughout and to ensure no lone working is undertaken.

To obtain permission for out of hours working by undergraduates the following procedure must be followed:

- 1) The under-graduate must first discuss the reasons preventing working during normal hours with his/her academic supervisor. Frivolous reasons such as difficulty in getting up in the morning are unacceptable.
- 2) If after these discussion out of hours working is deemed necessary then the risk assessment must further address: Supervision, Lone Working, Training, First aid & Emergencies.
- 3) Once the risk assessment is approved by the academic supervisor the academic supervisor must submit the risk assessment, along with an explanation, to the School Safety Adviser. The Safety Adviser will consider the application and will permit or deny the request and/or ask for amendments to the risk assessment. The safety Adviser may, on occasions, refer the request to the Head of School.
- 4) On no account should the under-graduate contact the Head of School directly on these matters. All communications should be through the academic supervisor.

### **1.8 OUT OF HOURS RUNNING OF EQUIPMENT**

Equipment should not be left to run unattended overnight unless absolutely necessary. When it is unavoidable, all reasonable precautions must be taken to prevent fire, flood, explosion or the emission of toxic materials.

Authorisation must be given by a member of the Academic staff who will be responsible for ensuring that it does not cause harm to anyone or cause damage to equipment or the building.

The TRO will issue YELLOW permits for overnight/continuous running of equipment. Permits should be fixed adjacent to the equipment and must clearly show the name and telephone number of an individual who can be contacted in the event of an emergency. Out of date Permits should be disposed of.

If water supplies are connected, it is imperative that all hose connections are secure and that waste pipes are fixed well down into drains so they cannot jump out and cause flooding.

Care must be taken to ensure that combustible material is kept well away from hot ovens.

### **1.9 LONE WORKING**

"Lone working" is defined as a situation where a member of staff or student is working without there being a second person nearby who:

- would be immediately aware if the first person were to get into difficulties and,
- would be able to provide an effective response to the emergency

Apart from activities which are clearly low-risk (e.g. office work, routine use of computers), lone working must not be undertaken without express permission from the supervisor. This applies whether the lone working is within or outside normal the working hours specified elsewhere in this document.

Before giving permission, supervisors should consider:

- the nature of the activities to be carried out
- the likelihood and consequences of something going wrong
- the experience and proven abilities of the individual who will be carrying out the work.

If permission is given for lone working, the lone worker must comply with any instructions from his/her supervisor in relation to the work.

In general throughout the School lone working will be allowed only in exceptional circumstances. It is School policy that permission to work alone at laboratory or workshop operations will not be granted. This kind of work always requires that there be someone within easy reach in the event of emergency.

Risk assessments for postgraduate research work must always address lone working.

### **1.10 MANUAL HANDLING**

Back injury resulting from manual handling is a common cause of lost time accidents. Injury to the lower back, caused by a momentary lapse of good practice, may never recover fully and can be prone to relapse. It is not only injuries to the back which can result from manual handling operations. Cuts, bruising of hands and feet are injuries which can occur when manual handling is not done correctly.

- 1) Members of the School with supervisory responsibilities must ensure that people under their control are not expected to carry out manual handling operations which are likely to cause injuries.
- 2) Before attempting to lift anything, size up the job. Do not hesitate to seek help with heavy or awkwardly shaped loads. Always look at the possibility of moving the load in an easier way (e.g. by using a trolley or some other form of mechanical assistance).
- 3) In manual lifting it is the leg muscles that should be used and NEVER the back. Lifting an item from the floor should always require bending at the knees.
- 4) Anyone with any doubts about their ability to lift or carry a particular item, should discuss it with their immediate supervisor. It will usually be possible to work out a different way to move the load.

## **1.11 ACCESS TO HEIGHTS**

### **1.11.1 Storage above head height**

Every year several people in the University are injured after falling while using an unsuitable means of access to reach storage above head height. The “unsuitable means of access” is often a chair or a table. It is particularly important in a laboratory, where the consequences of a fall can be severe, that a suitable means of access is used. Access to storage above head height should normally be by a step ladder or a “kick stool”. Chairs (and particularly swivel chairs) should never be used.

### **1.11.2 Work at Heights – West Wing Roof**

There are satellite dishes and, on occasions, electronic equipment, on the roof of the West Wing. Only authorised personnel are allowed access to the roof must stay within the fenced areas. Extreme care must be exercised during inclement weather.

### **1.11.3 Ladders And Steps**

Ladders and steps belonging to the School are checked annually for structural defects.

## **1.12 COMPUTER WORKSTATIONS**

Those working with keyboards and computer display screens for prolonged periods as a significant part of their normal work can be exposed to a number of health hazards. The principal hazard relates to the arms. The problems which can develop are referred to as Work Related Upper Limb Disorders. They were previously referred to as RSI (Repetitive strain injuries). The risks can readily be controlled by applying ergonomic principles to the design, selection and installation of computer equipment, the design of the workplace, and the organisation of the task.

All staff will have their workstations assessed for compliance with workstation standards. They will also receive instruction on how to use their workstations correctly.

Workstation assessors will be trained to carry out the assessments. The School Computing Officer has been appointed as workstation assessor for the School and will co-ordinate the assessments and maintain the records.

## **1.13 LABORATORIES**

The following should be instinctive practices for anyone who works in a laboratory. They make the laboratory a safer place for everyone but they are only of any value if everyone in the laboratory takes an active interest.

- Corridors, fire exits and passageways forming means of escape through working areas must be kept free of obstruction.
- Floor surfaces must be kept clean and in good condition.
- Any spillages and breakages should be cleaned up immediately.
- Benches should be kept tidy and gangways kept clear.
- ALL bottles should be clearly labelled with their contents and, where possible, marked with the appropriate hazard warning symbol (e.g. Marking a bottle with nothing other than a label saying “solution A” is not acceptable).
- Wash bottles containing anything other than water must be marked in a highly visible and distinctive manner.
- Do not set up apparatus in front of service controls or in a way which blocks exit routes.
- If any apparatus has to be set up above head height, ensure that a suitable means of access is available. (A suitable means of access will be a kick stool or a step ladder. Climbing on a bench, chair or laboratory stool is not acceptable.)
- Eating and drinking are forbidden in all laboratories
- Report all breakdowns and faults in apparatus to the technician responsible for the area. Do not attempt a repair yourself unless you are knowledgeable and qualified.
- Check all likely hazards and necessary precautions before starting any new procedure. See Section 2 of this handbook for details of Risk Assessment.

#### **1.14 WORKSHOPS**

The workshops are used for the manufacture and repair of equipment used in teaching and research. They contain dangerous machinery and electrical equipment therefore access is restricted. Staff or students who have business with the workshop must in the first instance report either to the TRO or the relevant senior technician who will then contact the appropriate workshop staff.

#### **1.15 FIELDWORK**

On Fieldwork trips, the Course Leader is responsible for the Health and Safety of the class. He or she should leave details of the destination, travel arrangements, and list of participants with the School Office. He or she should ensure that the activities on the trip are covered by the University Insurance Policy.

The person in charge should be aware if any member of the party suffers from a medical condition e.g. heart problems, fits etc, which may occur during the trip and what action to take should this occur. A first aid backpack kit can be borrowed from the Stores for the duration of the trip

If a minibus is used for fieldwork trips, the authorised driver should ensure that all passengers have their seatbelts fastened.

Further information is available in the separate publication: “University of Aberdeen, School of Engineering, Fieldwork Handbook”, available from the TRO or online from [www.abdn.ac.uk/engineering/about/safety.php](http://www.abdn.ac.uk/engineering/about/safety.php).

## 1.16 DRIVING ON UNIVERSITY BUSINESS

### 1.16.1 Insurance

Those driving vehicles which are owned by the University or which have been leased or rented must have completed a Driver's Declaration form and had it accepted by the University. This is the means by which they are authorised to drive University vehicles and they will then be covered by the University's motor insurance.

Those driving their own vehicles on University business **must** have extended their motor insurance policies to cover business use. Even driving for a short distance in the course of the working day in connection with University activities is business use. For example, driving from Foresterhill to Old Aberdeen to attend a meeting or a training course would be regarded as business use. If there were to be an accident during the journey and the driver's motor policy had not been extended, the insurance company could argue that the journey was business use and that it was not covered by the policy. The driver would then be uninsured and would be faced with the consequences which could be complex, expensive and involve criminal charges. (In deciding whether a journey in a private vehicle is deemed to be business use it does not matter whether the driver is claiming a mileage allowance through expenses for the journey.)

### 1.16.2 Minibuses

Members of staff who passed their car driving tests during 1997 or later and who want to drive minibuses on University business must first take a further driving test to add the minibus category to their driving licences. Those who passed their car driving tests before 1997 will be allowed to drive minibuses on University business but they **must** first complete a defensive driving course approved by the University.

To drive a minibus with up to 16 passenger seats on University business in the UK using a normal car driving licence a member of staff will need to:

- have passed his/her car driving test before 1st January 1997;
- ensure that a "section 19 standard permit" is displayed on the vehicle;
- have complete the necessary forms from the University's insurance office.
- Have completed an additional driver training course (Defensive driving).

If the driver passed his/her driving test after the 1st January 1997 then it is not possible to drive a minibus on University business unless a further driving test is taken. It is also necessary for the driver to meet higher medical standards. Note also that arrangements outside the UK are very different. Those intending to take minibuses abroad, which includes the Republic of Ireland, should make careful enquiries.

Meeting all the requirements to enable someone to drive a minibus can involve a lot of work. An alternative is to consider hiring two people carriers (with up to 8 passenger seats) instead of a minibus. These can be driven on a standard car driving licence with no need for further driver training or permits. This option should always be considered.

### 1.16.3 Vehicle Maintenance

University owned/leased vehicles should be under a regime of daily and weekly safety checks in addition to the maintenance recommendation specified by the vehicle manufacturer.

Hired vehicles and the privately owned vehicles of members of staff should be checked and maintained by the driver in accordance with the manufacturer's recommendations.

Further information on driving and vehicles is available from:

<http://www.abdn.ac.uk/safety/uploads/files/Driving.pdf>

<http://www.abdn.ac.uk/safety/resources/equipment/Minibuses>

<http://www.abdn.ac.uk/safety/uploads/files/Vehicle%20maintenance.pdf>

### **1.17 VISITORS, CHILDREN and PETS**

The nature of the School is such that it receives a large number of visitors, some of whom stay for only a few hours and others that stay longer, sometimes for many months. Staff should ensure that their visitors are aware of School Safety Procedures. Visitors staying for a significant period of time should be undertake a basic safety induction.

Visitors are the responsibility of the member of staff inviting them in and staff should ensure that guests are not allowed unauthorised access to offices and laboratories within the School.

Children under 16 years of age must be supervised by an adult at all times during a visit to the School, and must not enter laboratories or other hazardous areas unaccompanied. Exceptions to these restrictions are made for supervised educational visits and "Open Days".

No pets other than guide dogs are allowed in the School buildings.

### **1.18 SCHOOL PUPILS PARTICIPATING IN WORK EXPERIENCE**

School pupils participating in work experience in the University are, for health and safety purposes, regarded as employees. An assessment of possible risks to their health and safety with particular attention to their age and lack of experience is required.

There are special restrictions on the following types of work:

- working with machinery.
- working with electricity.
- working with lasers.
- working with chemicals, toxic material or radiation.

They are only allowed to do the work above under the following circumstances:

- where a written risk assessment exists.
- any risk is reduced to the lowest level that is reasonable.
- they have been given necessary training.
- where an experienced person is supervising.

The University has prepared a guidance note which is included in the appendices or available from <http://www.abdn.ac.uk/safety/uploads/files/Placements%20for%20school%20pupils.pdf>

### **1.19 PLACEMENT OF STUDENTS FROM THE UNIVERSITY OF ABERDEEN WITH OTHER ORGANIZATIONS**

Anyone who arranges placements with other organisations for University of Aberdeen students should contact the School Safety Adviser to discuss how health and safety aspects of the placement will be managed.

### **1.20 BUILDING WORKS and ASBESTOS**

The fabric of the building occupied by the School and the installed services (electricity, water, gas etc) are the responsibility of the Estates Section.

- 1) Anyone who notices any parts of the building which are unsafe and need to be repaired should contact the TRO who will contact Estates. Any urgent matters should be notified directly to Estates on their 24 hour emergency telephone number (27)3939.
- 2) Any alterations to the building or to the installed services must be carried out by Estates. This is essential to ensure:
  - Compliance with building regulations and fire regulations.
  - Installed services are not disturbed.
  - Any asbestos in the building is not disturbed (Many buildings in the University contain asbestos - it is perfectly safe as long as it is not disturbed)

Anyone wishing to carry out any work which might affect the fabric of the building (e.g. running cables, fixing items to the walls) should contact the TRO who will then contact Estates and discuss how best to proceed.

### **1.21 CONTRACTORS**

Contractors must never undertake any work in the School without first obtaining the permission of the TRO.

This is to ensure that:

- contractors' staff do not endanger their own health and safety by entering laboratories without taking necessary precautions and
- contractors do not endanger the health and safety of School staff and students by carrying out works in an inappropriate manner.

This applies both to contractors working directly for the School and to contractors brought in by Estates to carry out works on the fabric of the building.

Anyone planning to bring contractors into the School should contact the TRO in advance to agree any precautions which might be required.

### **1.22 HAZARDOUS WASTE**

Nearly all processes in the School will generate waste of some sort. Some of the waste will be hazardous in nature. The University provides a twice yearly collection

of chemical and electrical (WEEE) waste. At other times individuals must make their own arrangements for waste disposal through the TRO.

It is essential that staff, research students and other personnel arrange for the disposal of all chemicals in their charge before they leave the School so that any waste is properly identified. Supervisors must accept responsibility for this.

Residues of other chemicals should be kept in clearly labelled bottles. These should be deposited with the storeman who will arrange for their disposal.

Small quantities of waste oil can be disposed of via the workshop.

Broken glass and other sharp items **must never** be put in normal waste bins. Contact the storeman for disposal of these.

Further information on waste management is available from the University environmental web pages [www.abdn.ac.uk/estates/environment](http://www.abdn.ac.uk/estates/environment) or from the University's Environmental Office.

## **2. HAZARD IDENTIFICATION AND CONTROL**

### **2.1 MACHINE SAFETY**

#### **2.1.1 Normal Operation**

The normal operation of powered machinery, irrespective of whether it is part of a research project, requires that:

- The operator is trained and where necessary supervised.
- The machine is used correctly and maintained.
- The machine has been assessed and fitted with guards such that access to moving parts is controlled and flying debris is contained.

Where, as part of normal operation, it is necessary that movable parts are accessed then adequate procedures must be in place to prevent accidental energising of equipment. The procedures are dependant on the hazards identified during any risk assessment and the type of operations being performed. For example it is normal practice in workshops to have to change tool bits on lathes or other machines and therefore any risks are identified during an extensive training but in research equipment where no standard practice has been established then the procedures may need to be determined and written in to a procedure which operators must follow.

#### **2.1.2 Machine Maintenance**

During maintenance of any powered machinery it is often necessary to open it up and work on the motors, belts, gear wheels etc. In this case hands are in close proximity with the moving parts which could accidentally start up if nothing is done to prevent it.

#### **2.1.2 Machine Lockouts**

To prevent a machine from being accidentally energised lockouts are available in most laboratories and in the workshops. Lockouts are means by which the electricity can be prevented from being accidentally switched on by having padlocks or padlocked devices fitted around the machine switch or isolator. Advice on the most appropriate method can be obtained from the School Safety Advisor.

#### **2.1.3 Test and Experimental Machines**

Use of any of the testing machines is not permitted without technician supervision or without the supervision of a suitable academic member of staff. Perspex protection screens are available and should be positioned between the specimens under test and the observer and/or machine operator.

### **2.2 LIFTING EQUIPMENT**

The term "Lifting equipment" covers the mechanical equipment used for lifting (e.g. forklift trucks and trolleys, hoists, winches, chain blocks) as well as the devices used to attach the load to the equipment (e.g. chain slings, rope and fibre slings, rings, hooks, shackles and swivels). The hazards arising from the operation of such equipment are:

- Falling loads if there is a failure of equipment or attachment devices

- High velocity projection of components in event of catastrophic failure of load bearing parts.

To prevent then becoming a source of harm, items of lifting equipment should be:

- 1) Used correctly
- 2) Regularly inspected and maintained

### **2.2.1 Use of Lifting Equipment**

- Items of lifting appliances should be used only by persons authorised by the TRO.
- All lifting appliances and equipment must have test certificates and be clearly marked with a SWL (Safe Working Load).
- The lifting of a load should be halted after the load has been raised a few inches and the security of the slinging attachments should then be checked before proceeding.
- When using shackles, ensure that the pin is screwed securely into place.
- If lifting with a fork lift or pallet truck, ensure that the load is secure and will not top over.
- Never stand under a hoist, fork lift, or any lifting appliance.7) Keep hands and feet clear. Safety shoes/boots should be worn.
- Any equipment which appears to be faulty must not be used. It must be taken out of use and steps taken to prevent anyone else using it. Details of the faulty equipment should be reported to the TRO who will arrange either repair or replacement.
- Lifting equipment must not be put into use in the School until it has first been entered on the School's register of lifting equipment kept by the technician in the Structures lab.
- Lifting equipment must not be modified in any way by staff in the School without the approval of the TRO.

### **2.2.2 Maintenance of lifting equipment**

- 1) The TRO has overall responsibility for ensuring the maintenance of all lifting equipment in the School.
- 2) A designated person will:
  - Keep a register of all lifting equipment in the School
  - Ensure lifting equipment being entered into the register has appropriate certificates of test, is marked with an identifying number and with safe working load
  - Ensure that all lifting equipment is inspected at required intervals by the insurance company contracted by Estates to carry out such inspections
  - Ensure that any equipment failing inspection or not inspected by the due date is removed from use
  - Ensure that certificates of inspection are obtained and kept on file for all lifting equipment in use
  - Ensure that equipment requiring maintenance (in addition to inspection) is regularly maintained in accordance with manufacturer's specifications.

## **2.3 ELECTRICAL SAFETY**

The main hazards arising from the use of electrical equipment are:

- Electric shock
- Fire caused by overheated conductors
- Explosion due to a spark in a flammable atmosphere

To prevent electricity becoming a source of harm, electrical equipment should be:

- Installed correctly and be suitable for the application
- Used correctly
- Maintained in good condition

### **2.3.1 Fixed Electrical Installations**

The electrical installation in the building up to and including the electrical sockets or other point of supply is the responsibility of the University's Estates Section. No one other than Estates electricians or their contractors should interfere with the electrical installation or attempt to carry out repairs.

Anyone who needs changes made to the installation or believes part of it may be faulty should contact the TRO who will arrange for Estates to carry out any necessary work.

### **2.3.2 Portable Electrical Equipment**

All portable equipment must be regularly inspected and tested appropriately in accordance with the schedule below. Labels showing the date of the test and the date of the next test must be clearly attached to the equipment. A visual inspection of all electrical equipment used in undergraduate practical labs must be undertaken prior to the start of the first class and any faults rectified. Visual inspection of all electrical equipment prior to use must also be undertaken. Only equipment showing valid labels should be used and anyone discovering equipment with invalid labels should draw this to the attention of a technician or TRO who will arrange for an immediate inspection and test where necessary.

The schedule TRO will coordinate the programme for inspection and testing of portable electrical equipment.

### **2.3.3 Personal Electrical Equipment**

Anyone bringing personal electrical equipment for example kettles; microwaves; heaters; in to the University must have it inspected and tested prior to use. Contact the TRO who will arrange for this to be done.

### **2.3.4 Working with Live Electrical Terminals**

Live working means working on or near live conductors such that a person coming into contact with them could receive an electric shock. Live working is strictly prohibited unless no other method is possible following consideration of the alternatives. Under normal circumstances **no live working** is permitted. Anyone undertaking research requiring work to be conducted with live conductors must include this task in the risk assessment and ensure that adequate precautions are taken to prevent accidental contact with any exposed live conductors.

### **2.3.5 Correct use of electrical equipment**

- 1) Carry out a visual inspection of any electrical equipment before connecting it to the electrical supply. (Look for any obvious damage such as frayed cables and damaged plugs).
- 2) If any equipment is faulty, disconnect it from the supply and take steps to prevent anyone else using it. (Place a notice on both the equipment and on the plug) Make arrangements to have the equipment repaired by contacting the TRO.
- 3) Always replace a blown fuse by a fuse of the correct rating. (A 13 amp fuse will be too large for most items of equipment) If the replacement fuse should blow, the equipment should be regarded as faulty and not reconnected to the power supply until the fault has been repaired.
- 4) Do not use multiway plug-in adapters with electrical equipment. They can lead to overloading of sockets. Power only one piece of equipment from each socket. If there are not enough sockets available, arrange to get an approved extension lead.
- 5) Ensure that all cabling is properly routed and does not cross areas where the cable may be damaged or trail across walkways.
- 6) When using electrical equipment in areas where water may be present, always provide additional protection by the use of an RCD (Residual Current Device - formerly know as an earth leakage circuit breaker). They may already be installed as part of the electrical installation for the building - check. If they are not already fitted to the installation, portable RCDs can be obtained from the TRO.
- 7) Only attempt to repair electrical equipment if you are competent to do so and having been given authority by a supervisor. When carrying out repairs always disconnect the equipment from the supply by pulling out the plug. Take steps to prevent anyone plugging it in again while you are carrying out the repair.

## **2.4 LASER AND OPTICAL RADIATION SAFETY**

The University has a Laser Safety Adviser (LSA) who can advise on all aspects of laser safety. The LSA is a service provided to the University by NHS Grampian Radiation Protection Service and contact information can be found at <http://www.abdn.ac.uk/safety/contacts/central/>.

In addition to the University's Laser Safety Adviser the School has a number of trained Laser Protection Supervisors to locally manage laser and related safety for areas including: Laser Labs, High Power (CO<sub>2</sub>) Laser Lab and the Fluids Lab.

Any member of the School who has any doubt as to his or her duties regarding laser safety or has any concern regarding laser related safety matters should contact the University's Laser Safety Adviser . All new laser set-ups or changes to existing ones should be discussed with the LSA.

## **2.5 COMPRESSED GASES**

The following are general rules and apply to all cylinders of compressed gases:

- All cylinders not in use should be stored in the cylinder store, outside the rear door of the Fraser Noble Building.
- All cylinders in the store must be correctly secured in a vertical position and segregated in accordance with industry guidelines.

- Examine each cylinder before installing for use, and if any defect is detected, reject immediately and report the fault to the TRO.
- Anyone handling gas cylinders should wear protective footwear and industrial gloves.
- All cylinders must carry a label. The label is the only sure means of identifying the gas inside. Do not use a cylinder if the label is missing or badly damaged.
- Cylinders must be transported only when secured vertically in a cylinder trolley. Cylinders must never be rolled along the ground.
- Cylinders should not be transported with the pressure regulator attached unless on a trolley specifically designed for this purpose.
- Cylinders must always travel unaccompanied in lifts. The cylinder should be made secure and a sign attached warning passengers not to enter the lift until the cylinder has been removed.
- During use, cylinders must be kept in a stand or chained to a bench or wall.
- Make frequent checks that the cylinders under your control are fitted with the correct valve and regulator and that all connecting hoses are in good condition. Regulators beyond their expiry date must be disposed of.
- Always open valves slowly. Do not use excessive force on valves and gauges. If a cylinder valve cannot be opened readily, it should be returned to the supplier.
- After use, always shut off the gas at the cylinder valve and release the pressure in the gauges before finally shutting all valves.
- The valve keys must be kept in position on each cylinder valve, so that in the event of an emergency, the cylinder can be quickly shut off.
- Understand the hazardous properties of the compressed gases you are using (e.g. flammability and toxicity).

## **2.6 PERSONAL PROTECTIVE EQUIPMENT**

### **2.6.1 Safety Helmets**

Whenever work is carried out on more than one level with workers and their apparatus above each other, safety helmets should be worn. Date of manufacture will be marked inside the helmet. Helmets should normally be replaced after 5 years (from date of manufacture).

### **2.6.2 Eye Protection**

Eye protection should be worn whenever there is a likelihood of material of any kind entering the eyes. Normal spectacles are not an effective or acceptable form of eye protection. Where the risk of injury to the eyes is high, goggles or full face visors will be required. Where guards are provided they should be used.

### **2.6.3 Respiratory Protection**

Laboratory procedures and experimental work should normally be designed to keep airborne contaminants such as dust, toxic gases and fumes away from people. The provision of face masks or breathing apparatus should be considered as a last resort and only in exceptional circumstances when it has not been possible to provide protection by other means. Respiratory protective equipment may also be required for use in an emergency (e.g. spillage or failure of normal controls).

The amount of protection required should also be considered. No respiratory protective equipment provides 100 percent protection. Manufacturer's specifications should be consulted before purchase to determine the amount of protection provided.



The contamination which accumulates on a lab coat should remain in the laboratory and not be transported around the building. The lab coat should therefore not be taken outside the laboratory (or laboratory suite) and in particular it should not be taken into libraries, write up areas or places set aside for eating and drinking. A failure to follow this very basic precaution can result in others in the building (as well as the wearer) being exposed to the contamination.

Note: It is almost certain that someone who does not wear a lab coat in the laboratory will take contaminants out of the laboratory on their clothing.

If there is a likelihood of splashing liquids, a thick rubber or plastic apron should be worn over the normal lab coat.

### **2.6.9 Hand protection**

Gloves are essential in laboratories and should be worn whenever there is a likelihood of the hand coming into contact with substances which could damage the skin or with toxic substances which could be absorbed through the skin (or through cuts and abrasions on the skin).

Catalogues of gloves suitable for laboratory use contain a very large range of different gloves made of different materials. A large range is essential as materials used have differing resistances to the different types of chemicals used in the laboratory. Some chemicals will go through the material of some gloves almost immediately. *It is vital to pick the correct glove to provide the right level of protection against the substances with which you are working.*

### **Allergy to latex gloves and resulting dermatitis**

The proteins which can be found in some cheaper latex gloves can cause an allergic reaction to develop on the skin of the hands with resulting dermatitis. In severe cases this can be so bad as to completely prevent an individual continuing with his/her normal job. All those who are long term glove users should be aware that they are at greater risk than short term wearers. Non-allergenic, powder free gloves are strongly recommended as the standard latex glove for the laboratory.

Note: It is a common misconception that glove powder is the offending allergen. It is not. The powder can cause mechanical irritation or chemical damage to the skin. This is a completely different effect on the skin to the allergic reaction produced by the proteins in the rubber of some cheaper gloves.

### **2.6.10 Safety footwear**

Safety footwear (with steel toe caps) should be used where it is necessary to move heavy equipment.

## **APPENDICES**

- Risk Assessment Guidelines
- Risk Assessment Form.
- Fraser Noble Safety Committee.
- Laser Protection Supervisors.
- Building Evacuation Team and Procedures

**School of Engineering**  
**Guidance on Completing a Risk Assessment**  
Based on HSE Five steps to risk assessment INDG163(rev2)

### **What is risk assessment?**

A risk assessment is simply a careful examination of what, in your work, could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm. Staff, students and others have a right to be protected from harm caused by a failure to take reasonable control measures.

Accidents and ill health can ruin lives and affect the University too if output is lost, machinery is damaged or insurance costs increase. It is a legal requirement that risks are assessed in the workplace and plans put in place to control the risks.

The law does not expect all risks to be eliminated, but requires that people be protected as far as 'reasonably practicable'. This guide tells you how to achieve that with a minimum of fuss.

### **How to assess the risks in your workplace**

Follow the five steps in this leaflet:

- **Step 1 - Identify the hazards**
- **Step 2 - Decide who might be harmed and how**
- **Step 3 - Evaluate the risks and decide on precautions**
- **Step 4 - Record your findings and implement them**
- **Step 5 - Review your assessment and update if necessary**

When thinking about your risk assessment, remember:

- A **hazard** is anything that may cause harm, such as chemicals, electricity, working from ladders, an open drawer etc;
- the **risk** is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.

#### **Step 1: Identify the hazards**

First you need to work out how people could be harmed. When you work in a place every day it is easy to overlook some hazards, so here are some tips to help you identify the ones that matter:

- **Walk around** your workplace and look at what could reasonably be expected to cause harm.
- **Consider** the equipment you are to use in your experimental work and how you intend to use it.
- **Ask your supervisor**, technician or fellow students what they think. They may have noticed things that are not immediately obvious to you.
- **Visit the University safety website:** Links to OHSIS provides access to HSE publications which provides practical guidance on where hazards occur and how to control them.
- **Check manufacturers' instructions** or data sheets for chemicals and equipment as they can be very helpful in spelling out the hazards and putting them in their true perspective.
- **Remember to think about long-term hazards to health** (eg high levels of noise or exposure to harmful substances) as well as safety hazards.

#### **Step 2: Decide who might be harmed and how**

For each hazard you need to be clear about who might be harmed; it will help you identify the best way of managing the risk. That doesn't mean listing everyone by name, but rather identifying groups of people (eg 'people working in the laboratory' or 'passers-by').

In each case, identify how they might be harmed, ie what type of injury or ill health might occur. For example, 'shelf stackers may suffer back injury from repeated lifting of boxes'.

Remember:

- Some staff or students have particular requirements.
- Extra thought will be needed for some hazards;
  - cleaners, visitors, contractors, maintenance workers etc, who may not be in the workplace all the time;
  - members of the public, if they could be hurt by your activities;
- If you share your workplace, you will need to think about how your work affects others present, as well as how their work affects you – talk to them; and
- ask your supervisor or technician if they can think of anyone you may have missed.

### **Step 3: Evaluate the risks and decide on precautions**

Having spotted the hazards, you then have to decide what to do about them. The law requires that everything 'reasonably practicable' is done to protect people from harm. You can work this out for yourself, but the easiest way is to compare what you are doing with good practice.

There are many sources of good practice – your supervisor, the technician and various websites listed at the end of this guidance will all help.

So first, look at what you're already doing, think about what controls you have in place and how the work is organised. Then compare this with the good practice and see if there's more you should be doing to bring yourself up to standard. In asking yourself this, consider:

- Can I get rid of the hazard altogether?
- If not, how can I control the risks so that harm is unlikely?

When controlling risks, apply the principles below, if possible in the following order:

- try a less risky option (eg switch to using a less hazardous chemical or method);
- prevent access to the hazard (eg by guarding);
- organise work to reduce exposure to the hazard (eg put barriers between pedestrians and traffic);
- use personal protective equipment (eg clothing, footwear, goggles etc).

Involve your supervisor and other staff and students working in the area, so that you can be sure that what you propose to do will work in practice and won't introduce any new hazards.

### **Step 4: Record your findings and implement them**

Putting the results of your risk assessment into practice will make a difference when looking after yourself and others.

Writing down the results of your risk assessment, and sharing them with staff and students in the laboratory, encourages you to do this.

When writing down your results, keep it simple, for example 'Tripping over rubbish: bins provided, staff instructed, weekly housekeeping checks', or 'Fume from welding: local exhaust ventilation used and regularly checked'.

A risk assessment is not expected to be perfect, but it must be suitable and sufficient. You need to be able to show that:

- a proper check was made;
- you asked who might be affected;
- you dealt with all the significant hazards, taking into account the number of people who could be involved;
- the precautions are reasonable, and the remaining risk is low; and
- you involved your staff or their representatives in the process.

There is a template at the end of this guide that you can print off and use.

If, like many, you find that there are quite a lot of improvements that you could make, big and small, don't try to do everything at once. Make a plan of action to deal with the most important things first and consult your supervisor and the technician as appropriate.

A good plan of action often includes a mixture of different things such as:

- a few cheap or easy improvements that can be done quickly, perhaps as a temporary solution until more reliable controls are in place;
- long-term solutions to those risks most likely to cause accidents or ill health;
- long-term solutions to those risks with the worst potential consequences;
- arrangements for training employees on the main risks that remain and how they are to be controlled;
- regular checks to make sure that the control measures stay in place; and
- clear responsibilities – who will lead on what action, and by when.

Remember, prioritise and tackle the most important things first. As you complete each action, tick it off your plan.

### **Step 5: Review your risk assessment and update if necessary**

Few workplaces stay the same and sooner or later, you will bring in new equipment, substances and procedures that could lead to new hazards. It makes sense, therefore, to review what you are doing on an ongoing basis and to formally review where you are, to make sure you are still improving, or at least not sliding back.

Look at your risk assessment again. Have there been any changes? Are there improvements you still need to make? Have your workers spotted a problem? Have you learnt anything from accidents or near misses? Make sure your risk assessment stays up to date.

When you are running an important experiment it's all too easy to forget about reviewing your risk assessment – until something has gone wrong and it's too late. Why not set a review date for this risk assessment now? Write it down and note it in your diary as a to-do event.

During the experimental period, if there is a significant change, don't wait. Check your risk assessment and, where necessary, amend it. If possible, it is best to think about the risk assessment when you're planning your change – that way you leave yourself more flexibility.

### **Writing it all down and recording the risk assessment**

What follows is a template which will help you in writing down your risk assessment.

Once you have completed this it should be signed by you and your supervisor. Copies must be lodged with the School Administration Officer and the technician in the laboratory at which you will be working.

### **Further information**

University safety website: [www.abdn.ac.uk/safety](http://www.abdn.ac.uk/safety)

Links to OHSIS (Occupational Health and Safety Information Service):  
[www.abdn.ac.uk/safety/ti/Welcome.htm](http://www.abdn.ac.uk/safety/ti/Welcome.htm)

Health and safety Executive (HSE): [www.hse.gov.uk](http://www.hse.gov.uk)

## School Of Engineering Risk Assessment

(Guidance notes to be read prior to completing risk assessment)

- No laboratory work is to commence without a risk assessment signed by the supervisor.
- The risk assessment must be reviewed when any changes are made to the equipment, materials, procedure or personnel.
- Technical staff can stop work if no risk assessment is in place or if, in their opinion, there is a risk to safety.

|   |                           |
|---|---------------------------|
| <b>Title of project</b>   |                           |
|   |                           |
| <b>Description of work</b>  |                           |
|   |                           |
| <b>Names of persons carrying out work</b>                         |                           |
|   |                           |
| <b>Name of Supervisor</b>   |                           |
|   |                           |
| <b>Location of work</b>   |                           |
|   |                           |
| <b>Start date</b>   | <b>Predicted end date</b> |
|   |                           |
| <b>List of major equipment, materials and facilities involved</b> |                           |
|   |                           |

**Record details of the hazards and who could be harmed**

|  |
|--|
|  |
|--|

**Record the precautions which will be taken**

|  |
|--|
|  |
|--|

|  |                  |             |
|--|------------------|-------------|
| <b>Prepared by</b>   | <b>Signature</b> | <b>Date</b> |
|  |                  |             |
| <b>Supervisor</b>  | <b>Signature</b> | <b>Date</b> |
|  |                  |             |
| <b>Copy with Supervisor?</b>   |                  |             |
| <b>Copy in Laboratory?</b><br>(to be retained for 1 year after completion of work) |                  |             |

## FRASER NOBLE SAFETY COMMITTEE

|                                     |                     |      |
|-------------------------------------|---------------------|------|
|                                     |                     | Tel: |
| Head of School (Convener)           | Prof. T. O'Donoghue | 2508 |
| School Safety Adviser               |                     | 2788 |
| Lead Laser Protection Supervisor    | Dr. T. Thevar       | 3776 |
| School Administration Officer (SAO) | Mrs J. Clark        | 4207 |
| School Workstation Assessor         | Mr J. Adamson       | 2563 |
| Academic Representative             | Dr J. Kiefer        | 2483 |
| Postgraduate Student Representative |                     |      |
| Physics Representative              | Mr R. T. Mowat      | 2525 |
| College Representative              | Mr E Stephen        | 2500 |
| UCU Representative                  | Dr C. Sands         | 2499 |

### Laser Protection Supervisors

|                              |   |                      |
|------------------------------|---|----------------------|
| Laser Protection Supervisors | Dr T. Thevar (Lead LPS<br>and Laser labs)<br>Mr G Cordiner (Fluids Lab)<br>Dr R. D. Neilson (CO <sub>2</sub> Laser) | 3776<br>2564<br>2797 |
|------------------------------|---|----------------------|

FRASER NOBLE EVACUATION PROCEDURES  
September 2011

Building Evacuation Team Checklist

|   |  |                                     |   |
|---|--|-------------------------------------|---|
|   |  |                                     | √ |
| <b>Third Floor</b>                          | East Wing.   | J. Adamson/H. Chandler              |   |
|   | West Wing (Attic).   | <i>Local Evacuation Rules Apply</i> |   |
| <b>Second Floor</b>                         | East Wing.   | C. Sands/J. Harrigan                |   |
|   | West Wing.   | <i>Closed for refurbishment</i>     |   |
| <b>First Floor</b>                          | East Wing.   | K. Fowler/S. Carnie                 |   |
|   | West Wing.   | <i>Closed for refurbishment</i>     |   |
|   | Institute of Mathematics.  | R. Kessar/R. Archbold/<br>J. Kedra  |   |
| <b>Ground Floor</b>                         | Cement lab,<br>Stores,<br>Materials,<br>HPHT,<br>012.  | J. Masson/M. Gourlay                |   |
|   | Geotechnics & Structures Research lab,<br>High Strain Rate Lab,<br>Teaching Labs 1 & 2,<br>Biomechanics Lab. | D. Craighead/I. Miller              |   |
|   | Workshop.  | A. Robertson/D. Logan               |   |
|   | Lecture Theatres.  | A. Robertson/D. Logan               |   |
|   | Teaching labs 3 & 4,<br>Dynamics & Control,<br>East Corridor.  | A. Styles/J. Walker                 |   |
| <b>Fire Brigade Liaison Officers (FBLO)</b> |  | D. Logan<br>E. Stephen              |   |

## Procedure to follow during an emergency or fire drill:

- AVOID PUTTING YOURSELF IN ANY DANGER.
- Working towards an exit you should check rooms and corridors in your designated area and instruct people to leave by the nearest exit.
- You should then leave by the nearest exit and liaise with the fire brigade liaison officer (person wearing the yellow jacket) at the front door of the building and tell him/her that, to the best of your knowledge, the area is clear. If someone refuses to leave you should let the FBLO know.
- You may then be asked to stand sentinel at a door to prevent anyone from entering the building.

### Information:

- Muster Point: Area immediately in front of Meston Building
- Fire Brigade Liaison Officers is the first person from the above list to get to the front door and don the yellow jacket and obtain the building information and checklist.

## Fire Brigade Liaison Officer

The first member of staff from the "Building Evacuation Team- Fire Brigade Liaison Officers" leaving via Fraser Noble main entrance will undertake the role of Fire Officer. They should:

- On exit empty the fire information box in the foyer.
- Don the high visibility fluorescent vest.
- Delegate a member of staff to each Exit to prevent re-entry.
- Direct evacuees to gathering point(s).
- Consult with evacuation team and members of staff to confirm their building area was emptying.
- Try to establish source of fire/alarm.
- Delegate qualified First Aiders to look after casualties.
- Ensure emergency services have easy and fast access.
- Report to the emergency services on their arrival, passing on all relevant information which may include, location and nature of fire: areas of building with potential fire hazards (map): injuries: missing personnel.
- Permit re-entry to the building only with permission from the emergency services and after the alarms have been silenced
- Check with security if an electrician has been called. If no-one from security in attendance, call Ext 3939 to request attendance from an electrician to silence and reset the alarm.