

School of Physics and Astronomy
University of St Andrews

Health & Safety Policy
&
Safety Guide

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Introduction

This booklet gives some basic health and safety guidance as well as giving the local rules operating within the School. This policy gives details of significant hazards in the workplace, the control measures implemented and monitoring procedures carried out to check that these measures are effective. A list of those members of staff who provide safety advice for particular hazards is provided on page 4.

The rules and guidance given in this booklet are derived from risk assessments carried out during regular School and University safety audits, in compliance with the relevant statutory requirements. This booklet is kept under review and updated as required. They form the “definitive version”. Printed copies of this document may be out-of-date.

The policies and guidance given here are to be considered as being in addition to the University Safety Policy and Guidance Notes. They are also to comply with University local rules and all relevant legislation.

Relevant links to the Government’s [Health and Safety Executive](#) will appear throughout the policy. One particular source of information that you may want to consult is the HSE leaflet on "[Health and Safety Law - what you should know](#)".

The [University’s Environmental, Health & Safety Services](#) web pages also have information you may find useful.

INDUCTION - Everyone in the School must read the on-line Health & Safety Induction and complete the quiz at the end within 1 month of starting. There are two induction options – one for office based staff and one for everyone working in a laboratory or a workshop etc. - the inductions can be found on the School web pages under Students & Staff, then Safety at: <https://www.st-andrews.ac.uk/physics/safety/index.php>, the inductions are at the bottom of the page under ‘Other safety documents’.

Safety Policy statement

Matters of Health and Safety within the School are the responsibility of the Head of School.

There shall be a safety management structure for the school. There will be a School Safety Coordinator appointed by the Head of School, delegated to deal with the day-to-day management of safety. There will also be specialists in specific fields with delegated duties to advise the coordinator and the Head of School on their special area. See the [list of school safety duties](#) for details.

There will be a School Safety Committee. This committee will meet at least twice a year and comprise representatives of all categories of staff and students within the School. The Head of School will normally chair this committee.

The School Safety Committee shall determine and co-ordinate the safety policy for the School paying due regard to the relevant governing legislation, the recommendation of the various University safety policies and committees and the Safety Office.

The School will carry out a general risk assessment and endeavour to minimise risks to employees and students by acting on appropriate legislation, providing training and adequate safety equipment, and encouraging safety consciousness within the School.

The School shall endeavour to minimise risks to visitors, contract labour, and service engineers who may come into contact with materials associated with the School both within the buildings and elsewhere.

The School shall keep appropriate records and risk assessments to comply with legislation.

Accidents and incidents will be reported to the Safety Office and thoroughly investigated by the School Safety personnel or the University Safety Adviser.

The School shall carry out safety inspections at least once per year and at any time if required for current updating. The inspection team will include the Safety Coordinator but may co-opt other specialist members, including the chairman. Reports of these inspections will be made available to the Safety Office.

Signed by the Head of School:



Professor Graham A Turnbull

Emergency

In case of emergency dial 9-999 from any telephone.

Safety self-check

To help you do a self-audit before a building inspection is made, a checklist has been produced. The checklist is available in [Appendix A](#).

Since the checklist is for formative use, if you find you will be giving the *wrong* answer, then you should consider how you could fix the problem, enabling you to give the *right* answer. This is much better than having an inspection team demand you fix the problem before you can continue with any other work!

School Safety Duties

The Head of School has responsibility for safety in the School. The following list shows those members of the School with delegated duties in particular areas of safety. These safety advisers must be consulted before designing any experiment that may create a hazard.

Head of School	Graham Turnbull
Safety Coordinator	Derek Milroy
Security, Building Fabric and Fire Safety	Derek Milroy
Radiation (Laser, Ionising, Non-ionising)	Cameron Rae
Electromagnetic Radiation	Duncan Robertson
Static Magnetic Fields	Robert Hunter
Pressure Systems	Callum Smith
Cryogenics	Callum Smith
COSHH, Chemicals and Waste Disposal	Paul Donaldson
Manual and Mechanical Handling	Stephen King
Mechanical Safety	Mark Robertson
Electrical Safety	Mark Ross
Display Screen Equipment	Aly Gillies
Graduate Student Representative	James Burch / Josh Argyle
Janitorial Representative	Garry Muir
Post Doctorate Representative	Duncan Robertson
Disability Coordinator	Bruce Sinclair
Biological Safety	Andrew Morton

Fire

If you discover a fire you should follow the standard fire actions displayed on blue notices around the building. The text of this notice is reproduced below.

Any disabled person who believes that they require assistance in the event of an emergency evacuation should contact the School Safety Coordinator (Derek Milroy).

If you have left an experiment running that could be dangerous, meet the Fire Brigade and warn them.

The Fire Alarm is a continuous electronic siren.

The Fire Alarm is tested on a Monday at 14:00hrs when the alarm is activated for approx. 10 seconds. You should take no action when this test is activated.

FIRE ACTION

Any person discovering a fire:

Sound the alarm by operating the nearest call point. If none, shout "FIRE!"

Call the fire brigade - Dial 9-999 (University Telephone System) or 999

- State precise location of fire. (Wait for confirmation of the message.)
- If safe to do so - attack the fire yourself with a suitable appliance. (Do not endanger yourself or others in doing so.)

On hearing the fire alarm:

- Leave the building by the nearest available exit.
- Close all doors behind you.
- Report to the person in charge at your assembly point:
The car park in front of the main entrance (level 2).

Do Not:

- Take risks.
- Stop to collect personal belongings.
- Use any lifts.
- Re-enter the building until authorised by a Fire Brigade Officer.

Fire prevention

Storage of cardboard boxes, particularly those containing packing materials e.g. Styrofoam, is strongly discouraged. In the event of a fire the cardboard provides excellent fuel, and the packing materials are a source of extremely toxic gas.

Medical Emergency

Follow the procedures given on the Medical Emergency notices around the building. The text is reproduced below for completeness.

The following are trained First-Aiders within the Physical Sciences building:

• Paul Donaldson	Teaching Laboratories	Rm 324	Tel 3148 / 3132
• Mark Clifford	Teaching Laboratories	Rm 324	Tel 3148 / 3132
• Steve King	Photonics Innovation Centre	Rm 132b	Tel 7309
• Mark Robertson	Mechanical Workshop	Rm 130	Tel 3276
• Mrs Linda Cousins	School Office	Rm 211	Tel 3111

First aid boxes are located at:

- Adjacent to the lift doors on each floor
- The south entrance to the teaching labs on level 3
- Outside Room 301, level 3
- Outside the janitors office adjacent to the main entrance, level 2
- In the north-east corner outside the electronics technicians workshop, level 1

Do not move the casualty, unless they are exposed to further danger. Do not risk injury to yourself while trying to help the casualty.

Medical Emergencies Procedure

If the condition requires further treatment either refer the casualty to the Community Hospital, Largo Road, St. Andrews (minor injuries)

or if immediate medical attention is required telephone an ambulance on 9-999 (University extensions) or 999 call box

Advise ambulance control of the location of the incident and of the type, seriousness and number of casualties involved.

Accident reporting

All accidents, unless obviously trivial, must be reported on the official University Accident Report form as soon as possible, and always within twelve hours, to enable fulfilment of statutory obligations. By law, major accidents (e.g. broken bones, electrical near-misses, etc.) and accidents causing the person to take seven or more days off work, must be reported by the University to the Health & Safety Executive. Reporting forms can be obtained from the University EHSS web page or the School Safety Coordinator.

The online form should be completed, printed and then signed by the person concerned and the School Safety Coordinator. The form should then be sent to the Director of EHSS. One copy of this form should be kept by the injured person as their record, a second kept by the School as their record of the incident with the original copy sent to the Director of EHSS. An investigation to determine the cause of the accident will be carried out to comply with the legal requirements.

All dangerous occurrences or “near miss” incidents should also be reported. These reports are used as part of the ongoing monitoring of Health & Safety around the University and can indicate areas where further safety action is required.

Gas Escape or Toxic Spill

The following procedure should be followed in case of any escape of gas (compressed gas, cryogenic spill, or “quench” of a superconducting magnet) or a major spillage of a hazardous substance:

1. Evacuate the room, or if considered necessary, the building.
2. Do not attempt a clean-up operation unless you are confident this can be carried out without risk to health.
3. If necessary, call the Fire Brigade: Dial 9-999, ask for the Fire Brigade and state:
University of St. Andrews, School of Physics & Astronomy, North Haugh, Nearest Access and Your Name, (alternatively if at Observatory state Buchanan Gardens)
4. Meet the Fire Brigade, or delegate somebody who knows the exact location and nature of the accident.
5. **Do not return to the room until it is declared safe by the senior fire officer present.**

Consultation with Employees

The University has issued the following statement under the Health and Safety (Consultation with Employees) Regulations 1996:

By agreement with the three recognised trade unions, Safety Representatives appointed by these Unions will also represent, with respect to the requirements of the above legislation, non-union members within their employment group.

Smoking Policy

The University Policy bans smoking in all University buildings.

New and Expectant Mothers

Many of the safety considerations for expectant mothers are important from the very early stages of pregnancy (e.g. inhalation of chemical agents). It is therefore desirable for expectant mothers to give early, informal, notice to the School. This will enable their working environment to be assessed for possible hazards.

There are statutory requirements to carry out specific risk assessments on the working environment of new and expectant mothers. Thus it is in the interest of an expectant mother to notify the school as soon as possible so that these assessments can be made.

Any early informal notification will be treated in confidence. The school would prefer to carry out confidential risk assessments than to discover too late that an expectant mother is working in an unsuitable environment.

The University has issued guidance notes on health and safety aspects for new and expectant mothers at work. The procedures laid down will only be acted upon when the University is formally notified that an employee is an expectant mother.

Risk Assessment

The Management of Health and Safety at Work Regulations 1999 require that assessment be made of all significant risks to health and safety.

A hazard is anything that can cause an injury or harm. The risk is the chance of that injury or harm happening. In risk assessment, all the hazards should be identified and then the chances of these hazards causing injury are judged. The regulations require that a risk assessment is suitable and sufficient and should identify the significant risks. This requires a systematic identification of the hazards and evaluation of the risks involved, considering the precautions already in place. Once the risks have been identified they should be minimised by either removing the hazard, and hence the risk, or by setting up controls that minimise the risk.

It is important to keep a record of these assessments to show how the conclusions were reached. Any new working practices that are devised to control the risk identified should also be recorded.

A booklet is available that gives guidance on this procedure and includes the five step procedure published by the HSE:

- Look for the hazards.
- Decide who might be harmed and how.
- Evaluate the risks arising from the hazards and decide whether existing precautions are adequate or whether more should be done.
- Record your findings.
- Review your assessment from time to time and revise it as necessary.

When carrying out an assessment, various possible control measures should be considered. These are, in order of desirability:

- **Elimination** - eliminate the hazard.
- **Substitution** - substitute a less hazardous substance/device.
- **Engineering** - put in place an engineered 'barrier' to the hazard e.g. screens or interlocks.
- **System of work** - use a written and agreed procedure, which minimises the risk.
- **Personal Protective Equipment** - as a last resort, use protective clothing.

A standard risk assessment pro-forma has been produced by the University Safety Office. This is reproduced in [Appendix B](#) of this booklet. Copies can be printed from this booklet, or obtained from the School Safety Coordinator. The form will give guidance on those items that should be considered in an assessment. This record should then be passed to the School Safety Coordinator for comment before any work is undertaken.

Electricity

Electricity is dangerous because relatively small currents, a few milliamps, passing through the body can upset the heart, stop breathing and disrupt the nervous system.

The Electricity at Work Act 1989 covers electrical safety. The University produces two booklets on this subject:

- Electricity at Work Regulations 1989 (Guidance notes on inspection and testing of portable electrical equipment) is a slim booklet of guidance on the inspection and testing of portable electrical equipment.
- The University local rules for electrical safety, this is a weighty tome.

Both of these are available from the School Safety Coordinator or the University Environmental Health and Safety Services.

All electrical equipment, **including personal equipment**, entering the school must be electrically safe. To ensure this, electrical equipment must be inspected and tested regularly. All equipment has a label attached giving the date of the last test. Any equipment without a label may be unsafe and must be checked/tested by Electronic Services.

Any faulty, or suspected faulty, equipment must be taken, or reported, to Electronic Services who will arrange testing and/or repair.

What follows is a short reminder to be careful; the rules and regulations are set out in the booklets mentioned and these should be consulted.

- A competent person must fit all plugs (e.g. Electronic Services).
- Where possible a Residual Current Device (RCD) should be fitted.
- All cables must be capable of handling the required current.

- All live parts must be insulated, or guarded so that they cannot be touched when live.
- To reduce tripping hazards, and to prevent damage through kicking or flooding, all trailing extension sockets must be kept off the floor.
- In a laboratory, know where the main isolation switch is and how to operate it in an emergency.

You can see the HSE version of these regulations, and other booklets relating to electrical and electronics safety, on the [HSE's publications webpage](#).

Cryogenics

Liquefied gases, and cold objects in general, are hazardous.

Specialised training covering the following will be given to honours and research students. Anyone else requiring to work with liquefied gases should contact the School Safety Coordinator for training. After this training you can work, under supervision, with systems operating down to liquid nitrogen temperatures. Further training must be undertaken from Cryogenics before working with liquid helium.

Anything that is below 273K (0°C) can cause burns, and the lower the temperature the more serious the skin-damage. Loose fitting non-absorbent gloves should be worn if there is any chance of touching cold surfaces, since bare skin can stick/freeze to the surface. Appropriate Personal Protective Equipment should always be used when handling cryogenic materials.

A container of liquid gas holds the equivalent of about 800 times its volume of that gas. While few of our cryogenic gases are toxic, only oxygen is any use for breathing. If a large volume of any other liquid gas is evaporated, this will displace air, and you may be short of oxygen. Only carbon dioxide will warn you of this; **inert gases cause suffocation without warning**. For this reason you must never travel in the lift with a Dewar containing liquid gas. Users should place the Cryogenic Dewar in the lift initially, then proceed to the relevant floor via the stairs, call the lift and remove the Dewar.

Since a small volume of liquid produces a large volume of gas, make sure that the gas boiling off has an easy escape route. A liquid gas container will explode if not vented. Ensure that ice frozen out of the atmosphere (or solid air if the liquid is helium) cannot block the vent.

Liquid nitrogen in an open-topped container is cold enough to condense out oxygen from the air; after a while there can be more than half liquid oxygen in your liquid nitrogen. Increasing the concentration of atmospheric oxygen increases the risk of fire. Oil and grease should never be used on equipment for use with oxygen.

Plastics become brittle when cold and liquid nitrogen can cause them to shatter. For example, an electrical cable may become bare wires when its plastic insulation shatters. Liquid nitrogen spills are also very good at lifting floor tiles. This can generate a tripping hazard.

High pressure systems

These are defined to be any system operating at more than 0.5 bar above atmospheric pressure containing a fluid, as described in the Pressure Systems and Transportable Gas Containers Regulations 2000. If the (pressure x volume) of the largest vessel in the system is greater than 250 bar-litres this must be notified to the University's nominated "competent person", who is Mr Robert Watson of Estates & Buildings.

Note, however, that all other pressure systems within the School, which fall outside the regulations, must be maintained to the same standard. The School is responsible for the inspection and testing of all such systems.

All pressure systems under these regulations must be inspected by the insurers every 14 months, and be tested and have their test pressure marked on them. Suitable overpressure relief valves must be fitted, and consideration given to bursting discs as a backup. Any new, or modified, pressure systems must be notified to the School Safety Coordinator.

The University guidelines on the use of pressure systems should be consulted and followed in all cases. These guidelines include the regular inspection and periodic replacement of all gas lines. All valves must be suitable for the gas being handled. All regulators should be to BSEN 585 or BS 7650, inspected regularly, and serviced/replaced periodically, probably at least every five years. The school is responsible for inspection/maintenance and replacement of all high pressure equipment.

All cylinders must be kept securely restrained, transported on a trolley and never dropped. The weakest part of a cylinder is the valve. If this is broken off, for example by the cylinder falling over, the cylinder will become very hazardous due to the large escape of energy (cylinders are normally charged to 200 bar and weigh around 60kg). Supervisors must give basic training before work is undertaken with a pressure system.

Always know the contents of any cylinder in your care. The colour codes on cylinders are unreliable, so check the label.

You can see the HSE version of these regulations, and other booklets relating to high-pressure system safety, on the [HSE's publications webpage](#).

High Pressure Water

The building has a high-pressure water supply used for cooling research and teaching apparatus. When demand on the system is low the pressure rises to over 100 psi.

There is always a risk of flooding with any water supply. However, because of the high pressure of this supply, a leak may spray water over a very large area. This water spray can reach electrical equipment and give a high risk of electric shock.

All valves, fittings and hoses used on the high-pressure water system must be able to withstand pressures well in excess of 100 psi. Hose connections should be rifled and the hoses clamped securely. These fittings should be regularly checked to ensure that they are secure.

Vacuum systems

The greatest danger in vacuum systems comes from the use of glass components. Bell jars on coating units are a particular hazard.

If glass is being used:

- Steps must be taken in the design of the system to minimise the strain on the glass.
- Any glass component must be surrounded by an implosion shield sufficient to contain a worst-case collapse.

Vacuum systems are not generally hostile provided the potential danger of an implosion is considered and precautions taken to avoid a sudden inrush into the system. An inrush could be of gas, liquid or loose solid objects drawn in by the gas and/or liquid. The danger is not so much the inrush, as the tendency of such material to continue in a straight line and come out of the other side.

It is important to ensure that the vacuum pump exhaust is vented outside of the building to prevent build-up of oil-mist. This mist is hazardous to health (coating inside of lungs) and will trip the fire alarm sensor resulting in a visit from the emergency services.

Supervisors have a responsibility to give training and guidance to all members of their group.

Lasers

Coherent light sources (i.e. lasers) and high brightness light emitting diodes (LEDs) can generate significant quantities of power over small areas, and at significant distances from the light source. As a consequence there are potential risks associated with the use of such equipment. These include thermal injuries to the eyes and skin, photochemical reactions in the eyes and skin and also the risk of fire.

The [Control of Artificial Optical Radiation at Work Regulations 2010](#) requires that all work with lasers and high brightness LEDs must be risk assessed and appropriate control measures implemented to eliminate or minimise the risk of injury. All work involving lasers and high brightness LED's within the School must then be carried out in accordance with the [University Local Rules For Work With Lasers](#), a copy of which can be found in each designated laser area. This document is based on the international/British Standards for work with lasers BS EN 60825.

It is essential for your safety, and the safety of others, that the School Safety Policy in relation to work with lasers is adhered to. The School Laser Safety Policy requires all laser workers to follow at all times the rules given in the University Local Rules for Work with Lasers, together with the following procedural requirements:

1. Any person working with lasers of Class 1M, 2M, 3R, 3B and 4 must be registered as a laser worker.
2. Any newly registered laser worker must be supervised by a skilled laser worker until, to the satisfaction of the Research/Service Group Head, they are sufficiently skilled as to operate safely & independently.
3. Research/Service Group Heads must notify the School Laser Safety Supervisor of all new lasers brought in and perform a suitable and sufficient risk assessment prior to their use.
4. Research/Service Group Heads must notify the School Laser Safety Supervisor of all lasers decommissioned or otherwise disposed of.
5. Research/Service Group Heads must complete and return to the School Laser Safety Supervisor an Annual Laser Safety Checklist.
6. Research/Service Group Heads must ensure there is an adequate supply of appropriate laser safety eyewear where required and that said eyewear is accessible without placing the worker at risk, e.g. outside laboratory.

7. Research/Service Group Heads must notify the School Laser Safety Supervisor of all visiting laser workers prior to their starting work with lasers.
8. Laser Workers visiting another institution must operate to safety standards on a par with those of the University of St Andrews or where the other institutions procedures are more stringent to those of the other institution.
9. Recipients of laser equipment loaned by the School to other Schools/Units must be alerted to the requirements of the University Local Rules for Work with Lasers. Compliance with these rules is the responsibility of the School/Unit to which the laser equipment is loaned.
10. Interlocks on doors to laser designated areas shall be inspected and tested regularly and a record of these tests maintained by the School.

In the event of an accident where eye damage is suspected, the casualty must present themselves as soon as possible to the Eye Clinic (during working hours) or Ophthalmic Ward (out of hours) at Ninewells Hospital, Dundee.

Supervision of compliance with the School Laser Safety Policy is delegated by the Head of School to the School Laser Safety Supervisor, Cameron Rae, who should be consulted and provide advice on laser safety matters and maintain appropriate records.

Ionising Radiation

Ionising Radiation includes radioactive emissions (alpha, beta & gamma rays) and X-rays. The sources of these radiations vary enormously in intensity but should all be treated with respect.

The University publishes a book of Local Rules for working with Ionising Radiation. The School's Radiation Protection Adviser, Cameron Rae, should be consulted early in the planning for any experiment involving radioactive or X-ray work. All persons working with ionising radiation must be registered with the University Safety Office as a 'radiation worker'. The University's Radiation Protection adviser must approve all projects (forms from the School's Radiation Protection Adviser).

Ionising Radiation can be both dangerous and emotive. Care must be taken to follow the procedures laid down in the local rules to ensure safe and acceptable working conditions.

The School Radiation Protection Adviser must be consulted before ordering any source of ionising radiation. Also handling and disposal needs to be certified by the Scottish Environment Protection Agency (SEPA).

You can see the HSE regulations, and other booklets relating to ionising radiation safety on the [HSE's publications webpage](#).

Non-ionising Radiation

The University publishes a booklet of local rules for working with non-ionising radiation (University Local Rules for work with Non-ionising Radiations Part 2 - ultraviolet radiation). A copy of this can be obtained from the School Safety Coordinator or Environmental Health and Safety Services.

When working with Ultraviolet Radiation a copy of this booklet should be obtained and the procedures laid down in it should be followed.

The dangers of exposure to ultraviolet radiation can be cumulative, and thus the exposure time limits for given levels of radiation must be followed carefully.

Since ultraviolet radiation is invisible, a suitable method of detecting it must be available and should be used.

Other forms of non-ionising radiation require different procedures for their detection and control. In particular the levels of exposure to microwaves and infra-red radiation fields must be considered if these are being generated. At present there is no published University Local Rules booklet for these radiations, but the National Radiological Protection Board has specified safety levels and these should be followed.

You can see the HSE regulations, and other booklets relating to non-ionising radiation safety on the [HSE's publications webpage](#).

Electromagnetic fields

There are at present no specific regulations in the United Kingdom governing the exposure of either workers or members of the public to electromagnetic fields at frequencies below 300 GHz.

The acceptable level of exposure to fields in this frequency range is a very controversial subject. There have been a number of articles in the press that suggest low limits should be imposed, e.g. Electronics World & Wireless World, Feb 1990 pp96-124.

A paper produced in 1982 by the National Radiological Protection Board (NRPB) gives the range of national recommendations for maximum exposure for given frequencies below 300 GHz. At the time these ranged from 0.5 Wm^{-2} (USSR) to 100 Wm^{-2} (UK), a factor of 200.

The UK recommendation was based on thermal effects on body tissue, while the USSR recommendation was based on functional disturbance to laboratory animals, i.e. do not upset the nervous system. The latest recommendations from the NRPB are published in 'Broad Statement on Restriction on Human Exposure to Static and Time Varying Electromagnetic Fields and Radiation' ISBN 0 85951 366 1 from HMSO. These are based on the field required to avoid 3 different effects:

- Thermal effects on body tissue, especially the eyes.
- Maximum current in limbs
- Electric shock and RF burns.

The NRPB recommendations are different for near-field and far-field, and for different parts of the body. It would be best to consult them yourself for each experimental set-up.

These radiation levels are only recommendations and it is up to the individual experimenter to set and monitor their own limits, probably after consulting the literature. However, the recommended safety levels should not be exceeded in any circumstances.

Static Magnetic Fields

Strong magnetic fields require to be treated with considerable respect. Apart from the obvious danger of loose magnetic objects flying towards the poles of a strong magnet, there are other possible dangers. For example, blood is a conducting fluid and it moves as it circulates around the body. Thus your circulation is a moving conductor in a magnetic field. Any magnetic field should not be strong enough to affect the circulation.

The recommended limits for exposure to static magnetic fields given by the National Radiological Protection Board are as follows:

1. Short-term exposure to the head and trunk should not exceed 2 tesla (T), and for the limbs 4 T. A 'short' period is defined as less than 15 minutes, not repeated for at least an hour.
2. Long-term exposure (8 hours per day) should not exceed 1 mT. (e.g. the immediate environment of superconducting magnets is often close to this limit.)
3. Metal surgical implants should be kept away from strong fields and strong fields may affect pacemakers. Notices should be posted to warn people with these devices to keep away.

Consideration is being given to having areas with fields greater than 1 mT classified as controlled areas. However, specialists at Ninewells Hospital have suggested that the maximum field for heart pacemakers should be 0.5 mT. It is suggested that the 1 mT limit should be determined and the extent of the 0.5 mT field should be marked clearly on the floor of labs containing superconducting magnet systems.

When working with superconducting magnets ensure your working practice allows for a rapid evacuation in case the magnet should 'quench' (revert to normal resistance) and evaporate the contents of the Dewar. To protect the user from the high voltages generated during the dissipation of electrical energy during a 'quench', care should be taken with the earthing of the system.

Hazardous Substances

The Control of Substances Hazardous to Health (COSHH) regulations require that the school carries out risk assessments for all procedures within the school involving the use of substances which pose a significant risk to health.

The assessment is required for the procedure, not the substance. The supervisor of the project is responsible for doing the assessment, which must be done before any new substances are ordered. The assessment will require information on all the substance to be used, any generated by reactions, and on the proposed disposal of any residues. This assessment is completed electronically on the CHARM system but is not valid until electronically signed by the worker and the supervisor.

It is important to plan the disposal of surplus chemicals and residues from reactions at this stage. It is possible that the disposal may incur a substantial cost.

All chemicals (and any other 'hazardous substance') must be brought into the school via the Stores. They may only be collected from the Stores by persons named on the risk assessment form. All substances entering the school should have hazard information on the label or have a product safety data sheet. When ordering any chemicals, ensure that this safety information is provided. Separate data sheets, or copies of them, may be lodged with the School Safety Coordinator if there is any likelihood of them getting lost.

If you have ordered chemicals, and they did not come with a product safety data sheet, check with the School Safety Coordinator. Sometimes suppliers send the data sheets under separate cover to the 'safety officer'.

A product safety data sheet must accompany any hazardous materials passed to the workshop.

Waste disposal

The duty of care in disposal of all waste rests with the waste producer until safe disposal has been carried out. The Special Waste Regulations controls the transport of waste and adds new categories of waste and controls their movement. The responsibility for waste does not end when it leaves the building, and liability may continue for some time if the method of disposal used was not suitable.

The school has an agreement with Fife Council, as the local waste disposal authority, for the removal and disposal of "domestic" type waste. This specifically excludes any waste that could be classed as hazardous. The University has published a combined document giving guidance on the routes for recycling of different types of waste and also on disposal of hazardous substances from laboratories. This document is available on the EHSS website at URL: <http://www.st-andrews.ac.uk/staff/policy/healthandsafety/publications/>

Any waste that is not non-hazardous "domestic" waste must be disposed of by other means. The University Safety Office can arrange disposal of these substances. You will however have to pay the commercial rate for their disposal and this should be considered when applying for funding for the research in the first instance.

Disposal of sharps also requires special care. We have a sharps container, which is held in the main Stores. This should be used for the disposal of all sharps. Because of the type of danger caused by sharps, the container must be taken to the sharp that is to be disposed of. DO NOT take the sharp through the building to the container.

Radioactive sharps must not be disposed of by this route. If you expect to produce any radioactive sharps you must contact the School Safety Coordinator. Arrangements for their disposal can then be made before any sharps are produced.

The School Safety Coordinator acts as a clearing house for requests for waste disposal and will arrange for the required paperwork. Disposal must be done by this route as records have to be kept centrally by the University. There are now heavy fines for not following the correct disposal procedures.

Consignments for disposal must be accompanied by a completed form. The form should be e-mailed to the University Safety Office, ehss@st-andrews.ac.uk. The consignment form can be downloaded from <http://www.st-andrews.ac.uk/physics/safety/resources/Blank-Lab-Small-List.xls>. The Safety Office will not accept hand-written forms, "it is taking up a lot of time trying to decipher some members of staff handwriting".

Glass disposal.

Winchester/Glass bottles which cannot be returned to the suppliers must be disposed of as follows:

- Plastic cap must be removed and discarded in the normal waste bin.
- The original contents must be completely removed, and then the bottle must be thoroughly washed with excess water to remove all traces of chemicals.
- The labels should be removed from the bottles or defaced to indicate that the bottle no longer contains the specified substance.
- The clean bottle must then be placed in the appropriate waste/recycling bin.

No other materials may be placed in this container.

Some types of glass are not accepted for recycling, e.g. pyrex, quickfit glass. Please check this before placement in glass recycling bins.

It is essential that this bin be kept free of contamination otherwise Fife Council will simply refuse to uplift it.

Waste disposal classes.

The school has a commercial waste disposal agreement with Fife Council for waste transfer. This covers the rubbish that goes out in black bags.

The agreement specifies that Fife Council will accept for transfer and disposal the following waste:

- Office debris; food scraps; paper & plastic packing material; floor sweeping and other cleaning waste; wood, metal and plastic waste from mechanical and electrical workshops.

Any waste not described in the above must be disposed of by special arrangement.

Waste is classified as 'special' or 'controlled'. All 'special' waste must be disposed of through the University Safety Office, this can be arranged by the School Safety Coordinator.

Personal Protective Equipment

The Personal Protective Equipment at Work (PPE) Regulations 1992 are now in force. Supervisors are expected to provide personal protective equipment and the training in its use. It is expected that people will use personal protective equipment as required when undertaking any hazardous operation.

Within the Physical Sciences building there are areas where personal protective equipment must be used. The mechanical workshop must not be entered unless eye protection is worn. Part of the cryogenics area is a noisy area and ear defenders should be worn when working in this area.

Gloves should be worn to protect your hand when manual-handling containers or materials.

Rubber-gloves should be worn when handling chemicals or biological samples. These should be removed and disposed of prior to leaving the laboratory. This eliminates any contamination of other building areas.

Manual-handling gloves and rubber-gloves can be obtained from the School's Stores.

You can see the HSE regulations, and other booklets relating to personal protective equipment on the [HSE's publications webpage](#).

Security

The security of the building has a direct influence on the safety of the working environment. There are many areas in the building that, while not directly hazardous, could be made dangerous by the untrained person.

The security of the building requires the cooperation of everybody working in it. If you see a stranger wandering round, offer to help them.

Outside normal working hours the building is locked.

Keys are issued where required, a £10.00 deposit is taken at the time of issue and refunded when the key is returned. You are reminded that when you stop working in the school you are required to return your keys.

Out of Hours working

If you are working outside normal working hours (after 10pm) you must sign-in on one of the sheets provided at the main entrance or at the back door (by the Stores). When leaving you must sign out to indicate you are no longer in the building.

This list is essential if there is a fire:

- if you are signed in then you will be searched for.
- if you are not signed in then no-one will know to search for you.

Similarly, failure to sign out puts at risk the lives of those searching for you. I am sure you do not want your failure to sign out to cause injury to others.

Lone-working

The School has a Lone Working policy and this can be found on the School web pages under Students & Staff, then Safety at: <https://www.st-andrews.ac.uk/physics/safety/index.php>, the policy is at the bottom of the page under 'Other safety documents'.

Noise

There is a general duty to reduce all noise levels as much as is reasonably possible.

There are statutory thresholds for working in a noisy environment. There are also limits for transients and pressure pulses.

Where a noise hazard is suspected, a competent person (e.g. University Safety Adviser) must assess the noise hazard. When one of the thresholds is exceeded then appropriate action must be taken to reduce such noise to permitted levels. Where ear defenders are provided they must be worn.

Hearing loss can be irreversible if the total and/or peak exposure has exceeded some threshold (which varies from person to person). This threshold is usually close to the action levels defined above. You can see the HSE regulations, and other booklets relating to noise safety on the [HSE's publications webpage](#).

Visual display workstations (Display Screen Equipment)

Regulations are in force which require users of workstations to undergo basic training, and to have a working environment that satisfies certain safety criteria. These criteria relate to seating, lighting and organisation of equipment. The criteria are designed to reduce the stresses and strains of using the workstation.

The regulations require that the DSE user be trained in the use of their DSE equipment and that their workstation should be risk assessed. A DSE user is defined as anyone who uses a VDU for prolonged periods; this is taken as regular, continuous spells of an hour or more. In the School of Physics and Astronomy that is likely to be the majority of staff.

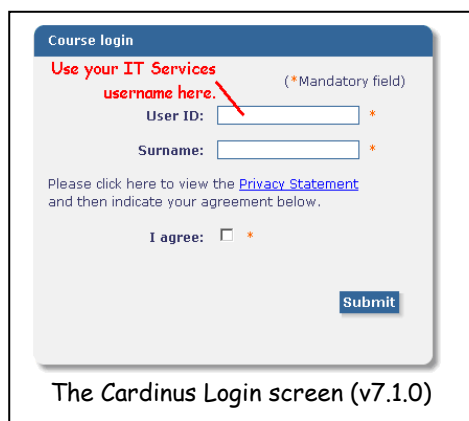
All DSE users are required to take a DSE training course and to have their workstations risk-assessed.

DSE training and workstation risk assessment is undertaken by means of completion of the Cardinus online course. The Cardinus course is available at the following URL:

<https://secure.cardinus.com/launch.asp?id=ustan22439>

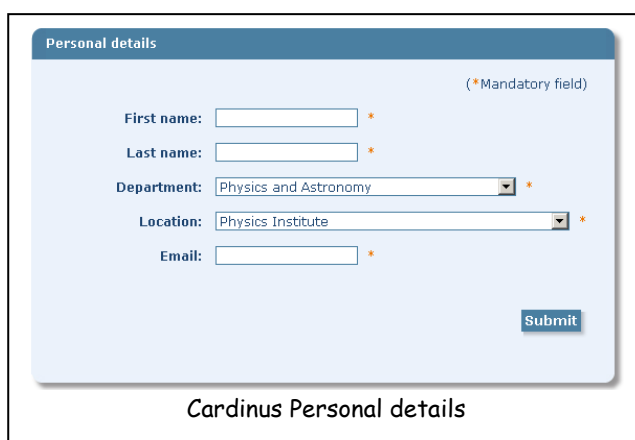
The training will take around 30 minutes to complete; thereafter you will be required to undertake a ten question multiple-choice test in which you must achieve 80% to be deemed to have passed.

Getting started with Cardinus & Training



The Cardinus Login screen (v7.1.0)

When you first try to use the Cardinus package you will have to register your details. You should use your IT Services username / email address as the User ID, enter your Surname and check the box to agree to the Privacy Statement. Click Submit to proceed.



Cardinus Personal details

Now fill in your Personal details as requested. Ensure that you associate yourself with the School of Physics and Astronomy by choosing *Physics and Astronomy* as your department and *Physics Institute* as your location.



Cardinus user status information

You can now work through the Safety Training and Risk Assessment at your own pace, logging out and into the system whenever you like using your IT Services username as your identity.

The Cardinus system ensures that you are actually reading the information by giving you little interactive sequences to complete at the end of certain blocks of text, e.g. "Place mouse over picture", "Click to view", etc. It is best just to read through the text rather than to "try to get the training over as quickly as possible"!

At the end of the four training modules you will be given a few conclusions, and then a multiple choice test consisting of ten questions. You need to get eight of the ten questions correct to be deemed to have passed the training.

Risk Assessment

Once you have finished the Safety Training, you can move straight on to the Risk Assessment. The risk assessment consists of 53 questions about your workstation environment. These are a sequence of Yes/No answers – be careful to read the questions and not just keep to the Yes, Yes, Yes sequence as there are a couple of curve-balls in there.

Document Holder

During the risk assessment questionnaire you will be asked about your document holder. If you do not have, and do not need one, then it is probably best to pretend that the one you don't have, or need, is: adjustable for height and tilt (Q31), suitable for purpose (Q32), satisfactorily sited (Q33). This will save you having a User Action at the end to rectify problems with your non-existent document holder!

User Action report

At the end of the Risk Assessment you will be given a "User Action Report". This gives you information on issues that you need to resolve in order to ensure that your Workstation is not causing you any Health or Safety problems. Where appropriate, you should speak to your supervisor to request that appropriate changes be made, or equipment be purchased or replaced.

More details on the safe use of DSE equipment are given in the Health and Safety Executive's Display Screen Equipment web pages at the URL: <http://www.hse.gov.uk/msd/dse/>.

Manual Handling

The Manual Handling Operations Regulations 1992 came into force in January 1993, and were amended in 2002. The purpose of the regulations is to reduce the risk of injury from manual handling operations involving heavy or awkward loads. The University has published a set of guidance notes based on these regulations.

To comply with these regulations an employer must, among other things, identify all manual-handling operations undertaken by its employees.

To this end it is required that all members of the school are aware of this requirement and co-operate in identifying such operations. The great majority of manual handling within the school is the one-off lifting and/or moving of single items. Before any such job is undertaken the risk must be assessed. This risk assessment must be done by a trained assessor (see list of safety duties).

When considering a manual handling operation the following options for reducing the load should be considered (in this order):

- Split the load into smaller, more manageable units.
- Get help to move the load.
- Use a mechanical aid (barrow or hoist). There are barrows provided. These are kept inside the loading bay and must be returned after use.

If in doubt, ask for help and don't do the job by yourself.

Advice on manual handling operation can be found in the university booklet Guidance Notes for Manual Handling Operations, obtainable from the School Safety Coordinator or Environmental Health and Safety Services.

Handling Gas Cylinders

The handling of gas cylinders is a regular job in the School so a guide to risk and handling procedures are as follows:

There are two main hazards in the handling of a gas cylinder. They are heavy and a difficult shape to control, thus they can fall over and cause damage or injury. If they fall over the valve may get damaged and if broken off, the cylinder will become very hazardous; when the cylinder is full (200bar) it contains a large amount of stored energy.

To minimise these problems, all cylinders must be transported on an approved trolley. These trolleys are shaped to hold the cylinder and have extensions to the rear at the bottom to prevent them falling backwards onto the person pushing them. The cylinder must be secured to the trolley during transit and kept secured before and after being moved.

Anybody handling a cylinder must have been trained by a person competent in moving a cylinder safely.

Handling large or awkward boxes and parcels

The School gets regular deliveries of large and awkward boxes. These often contain equipment ordered by research groups. A guide to the risk involved in handling these follows:

Many items come well packaged in large boxes. While these are not heavy they are difficult to lift. The major hazard from handling these boxes is personal injury due to incorrect posture during the lift/carry. The handling of any box larger than an A4 paper box should be considered hazardous. Similarly anything heavier than about 5kg may be hazardous, especially if it is bigger than the A4 paper box mentioned above.

To reduce the danger of injury from moving large or awkward loads, barrows are available. They should be kept in, and returned to, the loading bay next to the workshop door. These barrows should be used to move all large or awkward loads around the building.

Any item that cannot easily be lifted by two people onto one of these barrows is classed as a difficult lift and advice must be obtained from the appropriate person listed on the list of School Safety Duties.

Confined Spaces

Regulations are now in force concerning work in confined spaces. A confined space is defined as one with either limited ventilation or restricted access.

The main areas for working in confined spaces are under the floor on level one (foundations of the building) and in the pipe duct from the boiler house to the west. When working in such areas a second person must be present at the entrance to the area to ensure assistance can be called immediately in case of an accident. When working in these areas you should either carry two torches in case of failure, or use a lamp with a trailing flex (this may be followed to lead you out or a rescuer in).

If you have to work in one of these areas then the School Safety Coordinator should be consulted to ensure that the scheme of work to be followed would be within the regulations.

The [HSE's publications webpages](#) contain information on this subject. It is recommended that this site should be consulted as it gives very good guidance on this topic.

Access to Roof

Access to the roof of the Physical Sciences building is controlled by a permit-to-work system. There are a number of hazards involved in accessing the roof and so local rules have been produced and a permit-to-work must be obtained.

The roof has an unprotected edge, and a number of fume cupboard discharge flues. These are all covered in the local rules and before work starts a permit-to-work certificate must be completed.

The [local rules](#), and the [permit-to-work certificate](#) can be found in [Appendix C](#) and [Appendix D](#) of this booklet.

Work Equipment

[The Provision and Use of Work Equipment Regulations 1998](#) replace several acts covering the operation of specific types of equipment.

The regulations cover the safety aspects of all Work Equipment. This is everything from a screwdriver, hammer or drill bit, through portable drills, computers, lasers and tractors to cooling towers and blast furnaces.

The regulations require that the equipment should be suitable for the purpose, be installed safely and be safe to operate. For example, the law requires that guards be fitted to pillar drills and other rotating machinery. Authorisation must be obtained before using powered equipment in workshops. For each machine used proper certificated training and a demonstration of competence must be shown to supervisors of workshops and labs.

The [HSE's publications webpages](#) have leaflets relating to safety and Work equipment.

Appendix A: General Safety Check List

Please complete the following check list of safety items and use it as a way of doing a self-audit of your safety practice. The list is as full as possible; if you think there are things missing, please feel free to add them. All relevant sections should be completed. However, you may skip some sections if they are not applicable to you. Completed forms should be returned to the School's Safety Coordinator.

This form refers to the following areas/rooms:			
This form was completed by:		Date:	

1. Emergency situations	Yes	No
1.1. Is the Fire Exit route from your area known by its occupants?	Y	N
1.2. Do they know where their nearest First Aid box is kept?	Y	N
1.3. Are all the telephones easily accessible to summon help?	Y	N
1.4. Can the fire alarm be heard throughout the area?	Y	N
1.5. Do all your workers know the rules for out-of-hours working?	Y	N
2. Access & movement		
2.1. Are all exit routes free of obstructions?	Y	N
2.2. Are all cables/pipes/etc that have to cross the floor covered by suitable bridges?	Y	N
2.3. Are all cables/pipes/etc that are not on the floor well clear above head height?	Y	N
2.4. Are there any sharp corners of protrusions that could be walked into?	Y	N
3. Electrical		
3.1. Are all multi-way sockets off the floor?	Y	N
3.2. Are all mains supplies suitable for the equipment being supplied?	Y	N
3.3. Are all power cables run along safe tidy routes?	Y	N
3.4. Do all high voltage/current supplies have working interlocks on them?	Y	N
3.5. Are all high voltages suitably screened?	Y	N
4. Water - If you have high pressure water in your area check the following:		
4.1. Are all water pipes and fittings designed for the pressure they are working at?	Y	N
4.2. Are all water supplies routed to keep water away from electrical equipment?	Y	N
5. Gas - If you have any gas systems in your area check the following:		
5.1. Are all gas cylinders restrained?	Y	N
5.2. Are all gas lines made of a suitable material and fitted with approved unions?	Y	N
5.3. Are all gas lines inspected regularly and replaced periodically?	Y	N
5.4. Are all gas valves suitable for the gas being handled?	Y	N
5.5. Are all regulators to BSEN 585 or BS 7650?	Y	N
5.6. Are all regulators inspected regularly and serviced/replaced periodically (max every 5 years)?	Y	N
5.7. Are all toxic gases in areas with extract ventilation?	Y	N
5.8. Are all flammable gases in areas with extract ventilation?	Y	N
5.9. Have all pressure systems been checked?	Y	N
5.10. Have all pressure systems got safety valves?	Y	N
5.11. Have all glass vacuum systems got implosion screens?	Y	N
5.12. Have all vacuum pumps got venting and oil mist filters on their outlets?	Y	N
6. Cryogenics - If you have any cryogenic systems check the following		
6.1. Is there sufficient ventilation in case of spill?	Y	N
6.2. Can the ventilation be increased quickly in case of a quench or major spill?	Y	N
6.3. Are goggles and non-absorbent gloves available?	Y	N
7. Magnetism		
7.1. Is the maximum stray magnetic field in the lab above the 1mT?	Y	N
If YES then check the following:		
7.2. Is the area where the stray field exceeds long term exposure limits indicated?	Y	N
7.3. Is there any way of monitoring fields?	Y	N
7.4. Are there warning notices for strong fields?	Y	N
7.5. Do you know the field strength within your working area around the magnet?	Y	N

Continued on the next page ...

8. Ionising Radiation - If there are any sources of ionising radiation in your area then check the following:		
8.1. Are all radioactive sources labelled and kept in a safe?	Y	N
8.2. Is the area of work with radioactive substances correctly signed?	Y	N
8.3. Is dose monitoring available?	Y	N
8.4. Are procedures laid down in the University Local Rules followed?	Y	N
9. Microwaves - If you have any R.F. radiation fields above 30 MHz in your area check the following.		
9.1. Is the maximum accessible electromagnetic field in your area below 0.5 Wm ⁻² or, if pulsed, 0.4 Jm ⁻² ?	Y	N
If NO then check the following points:		
9.2. Do you know the maximum field strength generated?	Y	N
9.3. Are all beam lines well defined?	Y	N
9.4. Is leakage/scatter away from beam lines screened and kept to a minimum?	Y	N
9.5. Do you have any way of monitoring the fields being generated?	Y	N
10. COSHH		
10.1. Are all procedures covered by a signed risk assessment form generated by the on-line COSHH database system?	Y	N
10.2. Do you have an inventory of all 'substances' in this area?	Y	N
10.3. Have all workers been trained in the handling of all 'substances' they may have to use?	Y	N
10.4. Are all 'substances' stored in obvious, suitable & labelled places?	Y	N
10.5. Is ventilation provided in the storage area, if required?	Y	N
10.6. Are all flammable solvents in a correctly designed and labelled cabinet?	Y	N
10.7. If latex gloves are used, has the possibility of latex sensitization been considered?	Y	N
11. Waste disposal		
11.1. Do you know which materials you work with are special (or controlled) waste?	Y	N
11.2. Is there a procedure for the safe disposal of ALL waste?	Y	N
12. Environment - Check only those sections which apply to your area.		
DUST - If there is a source of dust in your area then:		
12.1. Is the dust controlled, if possible, at source?	Y	N
12.2. Are dust masks available and have the users been trained in their use?	Y	N
NOISE - If there is noise in your area then:		
12.3. Is all noise kept to a minimum?	Y	N
12.4. Are ear defenders available for use during noisy work?	Y	N
FUMES - If any fumes are generated:		
12.5. Do you do any soldering in this area?	Y	N
12.6. Do you have an extraction system for soldering flux fumes?	Y	N
12.7. Is there suitable ventilation (fume cupboard, extract fan, etc) for other tasks?	Y	N
12.8. Is a suitable mask available if needed and have the users been trained?	Y	N
GENERAL- to be checked by all:		
12.9. Is there any ventilation?	Y	N
12.10. Is eye protection available if needed?	Y	N
12.11. If there is a sink, is it, and the area around it, clean and tidy?	Y	N
13. Manual handling - If any heavy/repetitive manual operations are carried out check the following:		
13.1. Are all heavy items, which have to be moved, located where they are easy to lift?	Y	N
13.2. Are mechanical aids available for moving heavy/awkward items?	Y	N
14. Computer screens - If you have any computer screens in your area check the following		
14.1. Are screens placed to eliminate reflections on them?	Y	N
14.2. Can the screen be seen easily all users, including any with bifocal glasses?	Y	N
14.3. Are keyboards installed at a good working height?	Y	N
14.4. Is any seating used with the computer suitable?	Y	N
14.5. Is the work area round the machine uncluttered - a mouse needs space to run around?	Y	N
15. Controls & outside influences		
15.1. Do you use computers for instrument control?	Y	N
15.2. Could there be any hazard produced if an instrument control computer acted in an unpredictable fashion?	Y	N
15.3. Could your equipment become hazardous if supplies from an outside organisation were delayed/disrupted? (e.g.. Power cut)	Y	N
16. General		
16.1. Are you satisfied that best working practices are being followed in your area?	Y	N

Appendix B: General Risk Assessment Pro-forma

School/Unit/Residence

Title of work activity

Description of work activity:

.....
.....
.....
.....
.....

Description of significant hazards: (e.g. Slipping/tripping; Stress; Fire; Work at Height; Pressure Systems; Electricity; Dust; Fumes; Manual Handling; Noise; Poor Lighting; Low temperatures; Vehicles; Moving parts of machinery)

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Groups who may be at risk: Staff with disabilities Inexperienced Staff

Academic Staff Office Staff Maintenance Staff Technicians

Cleaning Staff Postgraduates Undergraduates Lone Workers

Contractors Visitors Members of the Public

Others (Please specify)

List existing controls and decide whether these precautions are adequate or more are required.

Has adequate information, instruction and training been given?

Are adequate systems or procedures in place?

Check that

- Standards set by legal requirements are being met
- Generally accepted industrial standards are in place
- Precautions represent good practice
- Precautions reduce risk as far as reasonably practicable

.....
.....
.....
.....

Continued on the next page ...

List outstanding risks and the action to be taken where it is reasonably practicable to do more:

Give priority to those risks which affect large numbers of people and/or could result in serious harm. Apply the following principles, if possible, in the following order:

- Remove the risk completely;
- Try a less risky option;
- Prevent access to the hazard (e.g. guarding);
- Organise work to reduce exposure to the hazard;
- Issue personal protective equipment;
- Provide welfare facilities (e.g. washing facilities for removal of contamination and first-aid);

Risks not adequately controlled	Further action to be taken

Signature of Assessor Date

Name of Assessor Review Date

Note:

1. The completed risk assessment form must be kept by the assessor and a copy given to the School/Unit/Residence Safety Officer.
2. This assessment must be reviewed and where appropriate revised if there is reason to suspect it is no longer valid or there has been a significant change to the task procedure.
3. This assessment must be made available to and discussed with all staff engaged on activities to which it relates.

Appendix C: Local rules for work on the roof of the Physical Sciences Building

A permit-to-work must be obtained for all access/work on the roof

The following local rules must be observed by all persons (University employees & outside Contractors) when on the roof of the Physical Sciences building.

- 1) Access to the whole roof will be subject to permission being granted by the School Safety Coordinator.
- 2) The roof has an unguarded edge except for small areas by the access door. If working within 2m of an edge (as indicated by the marked line), a safety barrier must be erected and/or safety lines used (by suitably qualified persons).
- 3) There are low level fume cupboard extract vents in the SW & NE corners of the roof. Before work is done in these areas appropriate warning notices must be in place in a prominent position at the fume cupboards banning use while the permit-to-work is in operation.
- 4) Any person on the roof experiencing an unpleasant smell from a flue outlet must immediately leave the roof and contact the School Safety Coordinator (Derek Milroy). Nobody should re-enter the roof unless they have received permission to do so from the School Safety Coordinator (Derek Milroy).
- 5) There are 3m high discharge flues from the clean room in the SE corner of the building. Before work is done down-wind of these the clean room staff must be notified and all toxic discharges stopped.

Emergency Procedure

On hearing the fire alarm (an electronic siren), quickly make safe any equipment (e.g. hot work), then evacuate the building and assemble outside the main entrance. If the escape stair is smoke filled retreat to a safe area and wait for instructions from the Emergency Services.

Note: Every other Monday at 3pm the alarm will sound for up to 30 seconds to conduct a weekly test. At all other times the building must be evacuated if the alarm is heard.

Appendix D: Permit-to-work certificate for work on the roof of the Physical Sciences Building

This form must be used if any work is to be carried out on the roof of the Physical Sciences building.

Part A (To be completed by contractor or, if University worker, supervisor)

On which part of the roof will the work be carried out?

Description of work covered by this permit

Permission is sought to carry out this work between ____ hours and ____ hours
on ____ (date).

Signed (for Contractor): -----

(In capacity as) _____ Date _____

Part B (To be completed by the School)

1) Arrangements have been made to ensure there are no discharges or radiation close to the work area covered
by this permit between ____ hours and ____ hours on ____ date.

2) The following special precautions will be required

Signed (for the School): -----

(In capacity as) _____ Date _____

Part C (To be completed by Contractor or, if University worker, supervisor)

The work has been completed.

Signed -----

(In capacity as) _____ Time _____ Date _____

(This form to be returned to the School Safety Coordinator after the work is finished)