



School of Chemistry

Health & Safety Handbook

2009 -2010

EMERGENCIES

1. Emergency Contact Numbers

FIRE - POLICE - AMBULANCE Dial 6666 [if no response dial 9-999]

If unsuccessful with above, use emergency red telephone outside the Porter's Lodge which is connected directly to the House Services Office.



UNIVERSITY POLICE

Dial 6345

WORKS SERVICES

Electricians, Heating Engineers

Dial 7171

Plumbers, other works

Dial 7171

House Services (24 hours)

Dial 6817

FIRST AID

Bedson Building:

Mrs I Lamb

Room 1.30

Dial 7102

Mr James Dyson

Teaching Lab 2.20

Dial 7078

Miss Helen Mann

Teaching Lab 2.20

Dial 7078

Dr Zuleykha McMillan

Room 2.18

Dial 6924

For more serious injury or in cases of doubt

CALL AN AMBULANCE



Emergency Procedures

FIRE



Discovering a fire – what you must do:

- **RAISE THE ALARM** - Shout **FIRE, FIRE!** and operate the nearest fire alarm call-point to warn everyone in the building that there is a fire.

IF YOU SUSPECT A FIRE, SOUND THE ALARM. DO NOT search for the seat of the fire. Only the Fire Service should do that, particularly where this involves opening doors when a fire is suspected to be behind them. If there is smoke in the corridor etc; then you have already found the fire and it is already time to **RAISE THE ALARM!**

- **CALL THE FIRE SERVICE**

DO NOT DELAY in summoning the Fire Service. Call from a place of safety. Dial 6666 if possible - this will be answered by the Operator/University Security Staff who will then inform the Fire Service with additional information to get them to the correct entrance. Alternatively, dial 9-999/9-112 from internal phones or 999 from external phones.

If you have to call the Fire Service directly, ensure a call is made to the University Security Control Centre on extension 6666 - let them know that there is an evacuation in progress.

- **ATTEMPT TO FIGHT THE FIRE – (if safe to do so)**

Prompt use of a fire extinguisher can nip a major incident in the bud. If you encounter a fire then only use the extinguisher if it is safe to do so, and you know how to use them. **Leave as soon as the extinguisher has emptied or the fire is growing!**

If in doubt tell someone and leave the building .

REMEMBER:

- **SOUND THE ALARM FIRST & CALL THE FIRE BRIGADE**
- **KEEP YOUR ESCAPE ROUTE CLEAR**
- **USE THE CORRECT TYPE OF EXTINGUISHER.**

Evacuation procedure ON HEARING THE FIRE ALARM:

- Leave the building promptly, **DO NOT** wait to be told and **DO NOT** attempt to collect personal belongings.
- Close doors and windows behind you if time permits and only where you can.
- Observe any specific instructions about isolating equipment or services.
- Use your nearest Fire Exit, (look for the green 'Running-Man' signs).
- If you find smoke blocking your route then go a different way.
- **DO NOT** use the lift.
- Move away from the building and keep the entrances clear for the Fire Brigade.
- Once out of the building proceed to the **Fire Assembly Point** and listen to the instructions given by the **Fire Marshal**, who is responsible for **your** safety and liaising with the Fire Brigade.
- **DO NOT** go back into the building until you are specifically told to do so by the **Fire Marshal** or the attending **Fire Service Officer in-Charge**.

NOTE: silencing the alarms is not a signal to re-enter the building.

Helping Visitors and others that you may encounter:

- **Fire Wardens or Marshals**, wearing high visibility jackets/armbands are there to help and ensure the building is evacuated; you **must** carry out any directions they give.
- **DO** Escort out your visitors, members of the public etc.
- **DO** Assist anyone with mobility difficulties.
Disabled staff and visitors will have a **Personal Emergency Evacuation Plan**.
- If there are disabled or injured people or others who cannot leave the building then:
TELL the Fire Warden and a Fire Marshal **EXACTLY** where they are (floor, stairwell or room number).

Fire Assembly Point:

The Fire Assembly Point for the **Bedson Building** is **the car park directly opposite the building, across King's Road.**



Your assembly point is here

The conduct of people at the Fire Assembly Points and on leaving the building is critical to everyone's safety.

Fire Marshals:

The Fire Marshals for this building are:

Andrew Crawford, telephone number :	0191 222 7080
Deputy: Gary Day, telephone number :	0191 222 7064
Deputy: Helen Mann, telephone number :	0191 222 7078

The Fire Marshal will take overall charge of the situation until the arrival of the fire brigade (if they are required). The Fire Marshal is responsible for ensuring **ALL** parts of the building are evacuated.

The Fire Marshal will be located at the Fire Assembly Point and will be wearing a high visibility jacket.

Fire Marshals / Wardens And Their Deputies:

Those persons listed below are the names of members of staff who perform the tasks of Fire Marshals and Fire Wardens, helping School (Fire) Safety Coordinators by monitoring fire precaution procedures and equipment in their own parts of the premises and assisting during fire evacuations. Once they have cleared their designated areas they report to a Fire Marshal .

		FIRE WARDEN / MARSHAL	DEPUTY
3rd FLOOR	Organic QVI Road Wing	Mr Wm McCormack	Dr C.Bleasdale
	Organic Edwards Walk Wing	Dr J.G.Knight	
	Organic Kings Road Wing, ADDI labs	Dr K. Haggerty	
	Physics area		
	Cluster rooms / Ground floor and lower ground floor Bedson teaching centre	Miss H.Mann	
2nd FLOOR	Teaching Labs	Mr J.Dyson	
	Centre For Lifelong Learning	Mr John Body	
	Nanosciences area	Prof. A.Houlton	Dr B.Horrocks
1st FLOOR	Inorganic research labs, seminar room, room 1.23	Dr K.J.Izod	Dr S.Docherty
	Rooms beyond Kings Road wing labs and 1st floor Bedson Teaching Centre	Dr A.R.Pike	Dr D.A. Fulton
	School Office, Faraday Room, Room 1.29, 1.30, LT3 Outreach Lab, Common Room, and CEAM Lab	Mrs I Lamb	Mrs M Douglas
GROUND FLOOR	Main research laboratory	Mr J.Dyson	
	Analytical services, LT1	Mr D.Dunbar	
BASEMENT	NCRL & Cryst. offices and labs.	Dr R.Harrington	
	NMR labs & offices, stores, Research lab	Mr R.Ingleton	
	Mechanical & Electrical Workshops , Student common room	Mr G.Day	Mr J.Corner

Wardens who are in a location remote from their assigned areas should leave the building immediately and not attempt to carry out their duty. Such wardens should inform a Fire Marshal that they were not able to assist with the evacuation of the area assigned to them.

Head Of School

On hearing the alarm, the Head of School or the acting Head of School will

- Take up station next to the Fire Marshal.
- Check whether the Fire Brigade has been summoned.
- Assume charge of the situation.

Safety Officer

On hearing the alarm, the Safety Officer and Assistant Safety Officer will

- Take up station next to the Fire Marshal.
- Assist the Head of School or acting Head in assuming responsibility.

In the event of the absence of all the above academic staff; the first member of academic staff to reach the reporting point should assume responsibility until relieved.

On being given the all clear by the Senior Officer of any Emergency Service present, the staff member who has assumed control will give instructions to return to the building, or parts of it, when it is safe to do so.



CHEMICAL RELEASE



Any chemical which has escaped or threatens to escape should be regarded, at least initially, as an emergency.

In the event of chemical release or threatened chemical release

- Evacuate the laboratory if the situation demands.
[take lab book/COSHH form if it is possible to retrieve these without endangering yourself].
- Evacuate the building by sounding the fire alarm if the situation demands, and then report to the designated

assembly point.

- If evacuation is not deemed necessary report the incident to a member of staff and safety officer who will assume control.

SUSPECTED BOMB



- Do not touch.
- Clear people from the immediate vicinity and sound the alarm.
- Call House Services [6666 or 6817 or use red telephone] who will assume control.

Contractors

Contractors working in the School must evacuate *via* the nearest fire exit and proceed to the assembly point. If the alarm has been accidentally activated by a contractor at work it must be reported to the Fire Marshal (at or near the main entrance) as soon as possible.

'False Alarms'

Any person accidentally activating an alarm must report to the Fire Marshal immediately.

3. Outside Normal Working Hours

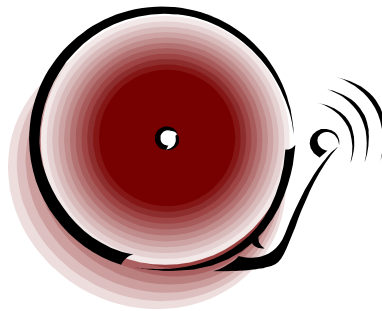
(5.15 pm - 9.00 am, weekends and holidays)

In the event of any emergency:

- ***Sound the alarm***
- Call House Services [6666 or 6817 or use the red telephone]
- Leave the building and report to whoever takes control

On hearing the alarm

- Leave the building quickly, but calmly, using the nearest fire exit. Close all doors behind you
- Do not use the lifts
- Do not search for the cause of the alarm sounding
- Report to whoever takes control



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Introduction

The School's health and safety policy is described in this document. It also contains general and specific safety arrangements to enable and assist members of the school - staff, students, visitors, etc. - to comply with the University's local rules and UK health and safety law. It contains advice, information and some specific instructions which apply to students, university staff, guests, visitors and other persons who have occasion to work in or visit the School.

You are required to read this booklet carefully and to ensure that you receive copies of other relevant health and safety information. All new staff, research associates and research visitors should be introduced to the Safety Officer or Assistant Safety Officer. They will be given a copy of the University's Health and Safety booklet. Additional documentation relating to the university's rules about micro-organisms, ionising radiation, manual handling, asbestos, contractors, etc. can be obtained from the Safety Officer or Assistant Safety Officer.

Undergraduate students receive 'Health and Safety for Undergraduates'. It is the responsibility of academic and technical staff to ensure, as far as is reasonably practicable, the safety of undergraduate students working in the School.



1. Policy Statement

The Health and Safety at Work Act and the Management of Health and Safety at Work Regulations 1992 require the University to formulate a policy with respect to the management of health and safety and to bring this policy to the attention of all those working in the University. The University requires the School to formulate its own policy and to bring this to the attention of its staff and others working in the School.

It is the School's policy to be committed to the University's Health and Safety Policy and to act positively to promote safe working practice and safety awareness so as to prevent injury and ill-health to personnel.

Health and safety is a standing agenda item for meetings of the School's Management Board and for School Teaching & Learning Committee Meetings. There is a Faculty Safety Committee which reviews policy, implementation and incidents on a regular basis.

As Head of School, I am responsible for all aspects of the health and safety of personnel in the School, from the formulation, through to implementation and development, of school policy. I encourage all members of the School to be actively involved in establishing, observing and pursuing safe working practices.

Day-to-day monitoring of the School Safety Policy is carried out by the Safety Officer and Assistant Safety Officers, the Chemical Hazards Advisor, the Biological and Radiation Supervisors, the Laser and UV Protection Officers, the Display Screen Equipment Assessor and the Manual Handling Coordinator (See List of Safety Personnel at end of Manual). These people are also available to help and advise; they should be consulted by any staff, student or visitor who has questions or doubts about health and safety matters.

A Health and Safety Notice Board is maintained near the Faraday Room in the Bedson Building and gives information about Safety Personnel, notes about specific items of current concern and other safety related matters.

It is the School of Chemistry's policy to:

- Provide the necessary resources (financial, physical and personnel) to minimise risks. This includes the provision of advice on health and safety.
- Implement and develop procedures and codes of safe working practice.
- Keep up-to-date with changes in health and safety practice by liaising with the University Safety Officer and professional bodies, by the use of information retrieval systems and through the attendance at training sessions, seminars and conferences by its safety officers and staff.
- Disseminate information on health and safety *via* electronic mail messages, notices, etc. as appropriate.
- Provide training in safe working methods.
- Maintain an appropriate framework for consultation on effective measures for the continual development and promotion of health and safety.

Safety Policy is reviewed on an annual basis for each edition of this document.

Head of School
September, 2009

2. Safety Advice and Management in the School of Chemistry

Head of School

The Head of School is responsible for all aspects of health and safety of personnel within the School. He makes executive decisions on safety matters and enforces an effective health and safety policy.

School Safety Officers

The role of safety officers (University or School) is to provide staff, students, etc. with the information and advice to enable them to work safely and to comply with local rules and national legislation.

School and Assistant Safety Officer

As a consequence of the size of Chemistry and the diversity of operations involving risk that take place within it, Chemistry has a Safety Officer and an Assistant Safety Officer. Each interacts with, and advises, the Head of School. In addition, they assist senior management with the implementation of School policy, dissemination of relevant information and encouragement of a pro-active attitude towards health and safety.

The **School Safety Officer** assumes a central role in issues pertinent to chemistry as a whole and as such will distribute to staff information received from the University Safety Officer and elsewhere as need be. He may call upon the Assistant Safety Officer to assist in these matters as required. The School Safety Officer is a member of Faculty Safety Committee which meets each month.

The **Assistant Safety Officer** provides back up and an advisory role.

In addition to the role outlined above, the School Safety Officer or Assistant Safety Officer is responsible for;

- Fire drills every Autumn Term (and reporting they have taken place)
- Annual Portable appliance testing
- Annual Fume cupboard testing
- Oversight of COSHH procedures
- Oversight of DSE assessments to ensure that they are undertaken when necessary
- Oversight (and investigation where appropriate) of accident reporting
- Oversight of unattended experiment procedures and access to laboratories
- Oversight of the School self-inspection scheme
- Following up on matters raised by USO or the Health and Safety Executive
- Keeping the Head of School informed

and liaising with :

Building services (heating, plumbing, etc.)
Contractors engaged by the University and School

Other personnel have responsibility for:

University Chemical hazards Advisor (Dr IR Hardcastle)
Biological and Radiation Protection (Dr MA Carroll)
Display Screen Equipment (Miss Helen Mann)
Lasers (Prof Anthony Harriman)

All 'Safety Personnel' in Chemistry are listed in at the end of this Manual. (Appendix V)

Academic Staff

Academic Staff are responsible for the safety of activities carried out by their students, technicians, secretaries, visitors and other co-workers under their supervision, and themselves. This includes the safe installation and use of apparatus under their control, and safe storage of chemicals in the laboratories used by their co-workers. They are also directly responsible for advising other people who work under their supervision, or workers in their laboratories, for example cleaners, maintenance personnel, service engineers, and visitors, on relevant safety matters. In teaching laboratories, together with the technician in charge of the laboratory, academic staff are responsible for the safe operation of undergraduate practical classes: the responsibility for the design of suitable experiments and their risk assessment lies with the academic having overall responsibility for that practical course.

Technical Services Manager

The Technical Services Manager manages the activities of the technical staff, including safety management.

Technicians

Technicians are responsible for safety in their designated area and the activities of other technicians under their supervision. On occasion they will be required by the Technical Services Manager to liaise with maintenance personnel, service engineers, other contractors and cleaners in their sections. In this regard they will assume responsibility for relaying safety requirements to such workers. This includes other staff, students or persons having occasion to work in Chemistry

All other workers in Chemistry have a duty to work safely and not to endanger others.

3. Safety Consultation

Health and Safety is a specific item on all main committees and meetings of the School, these include Management committee and School Safety Committee. In addition, safety issues can be raised with the School Safety Officer by anyone in the School at any time.

4. Risk Assessment

Modern health and safety law puts the onus on employers to identify the risks to which they subject their employees and others working on their premises. It requires identification of hazards and evaluation of the risk posed by the hazard. It demands that measures necessary to control the risk are put in place and, in case they fail, that appropriate emergency measures are in place.

The Management of Health and Safety at Work Regulations 1992 impose on the employer the duty to assess the risk of all activities. It is the responsibility of all staff to assess the risks of their work. A written risk assessment is not always necessary but the completion of a COSHH form (see fuller description later) is deemed essential for all experimental work

5. Safety Monitoring Procedures

'Self-Inspections'

In accord with the University Policy, the School is required to implement in-house monitoring and self-inspection arrangements to enable the Head of School

- To be kept fully informed on safety matters within the School
- To be confident that all activities meet appropriate standards of health and safety
- To be confident that those activities not meeting required standards can be rapidly identified and subsequently rectified

Audit teams will carry out a rolling monthly inspection of laboratory areas to identify hazards, check that proper control measures are in place and that School and University procedures are being complied with. These inspections will include confirmation that certain items have been addressed. A list has been provided to enable inspectors to readily check that these issues have received attention. A copy of this list is given in Appendix VIII. Members of staff responsible for a particular room or laboratory should inspect their areas on a regular basis and use the check-list to confirm that each issue has been addressed. Hazards must be noted and brought to the attention of the inspection team and/or safety officer. The check-list will be amended and improved in the light of experience. Records will be kept of the inspections and feedback given for review by the Management Board and Safety Committee.

Inspection teams will identify remedial action; the completion of which will be the responsibility of the member of staff in charge, in coordination with the safety officer as appropriate.

Supervisors should carry out 'general risk assessments' for their work areas. The assessment should identify hazards in the work area, categorize risk as high, medium or low, and identify measures taken or required to minimise the risks. It must be clear - on the laboratory door - what the hazards in the laboratory are, and any restrictions that apply.

'Portable Appliance Test' (PAT)

Inspections of portable electrical appliances in Chemistry are carried out on an annual basis or as deemed necessary. Results are recorded and an inventory of portable equipment is maintained.

Equipment which does not pass the test must not be used. Users of electrical equipment should also make regular visual checks on the appliances they use (look for loose fittings, frayed flex, warm parts, etc.) and arrange for any defects to be

rectified immediately or before further use.

Note: New electrical equipment should be registered with Mr Andrew Crawford when it arrives.

Fume Cupboard Testing

A programme of testing for all fume cupboards is in place: it is a requirement of the COSHH regulations that they are tested each 14 months.

Fume cupboards and LEV systems are tested via the safety office.

Permit to work

Each researcher must have a 'permit to work' issued by the Head of School (Appendix I & II). This is an agreement to work safely. Before leaving a similar declaration must be made that all chemicals, samples, etc. have been disposed of or left in a safe condition (see Appendix III). The cost of disposing of any materials/equipment left by the person leaving Chemistry may be charged to them.

Safety Training

All undergraduates must attend the Safety Lecture given for their stage during induction week. Safety aspects of chemical experimentation are discussed, demonstrated and reinforced throughout practical sessions.

All postgraduates must attend the Safety Sessions arranged at the beginning of each academic year. Individual safety instruction is given for specific work by supervisors.

New postdoctoral assistants and staff are encouraged to attend safety courses appropriate to their area of research.

All staff are encouraged to take safety training (including refresher courses) appropriate to their work.

6. Safety Instructions (*which are mandatory*)

Accidents - see Emergencies (Page 1)

All accidents (including incidents not involving injury) and near misses must be reported. The reporting procedure is two part, (i) informing a responsible person to take control of the incident and (ii) completion of an official accident report on the web at this address <http://www.ncl.ac.uk/internal/safety/>.

(i) The following must be informed of accidents as soon as is reasonably practicable:

- the School Safety Officer or Assistant Safety Officers
- the supervisor or research group leader

If the above are not available the accident must be reported to a member of academic staff as soon as possible and to the above when they become available.

(ii) The *member of staff* assuming control must ensure that an Accident Report is completed on the web address <http://www.ncl.ac.uk/internal/safety/>.

The accident will be investigated by the School Safety Officer and other staff if deemed necessary: all persons involved

may be required to write down the details of the incident and this information will then form part of the official report to the University Safety Officer.

All incidents involving carcinogens must *also* be reported to the Potent Carcinogens Officer.

Acetylene

Acetylene must only be used with a special valve restricted to < 9 lbs/sq in (6 bar,). Stainless steel rather than pure copper tubing must be used, due to risk of explosion. Cylinders should be kept more than 20 feet away from cylinders of air or oxygen.

Biological Safety

Microorganisms and other biological materials must be stored in specially labelled, locked containers. Dead Category B (Howie Code) bacteria and other microorganisms should be handled in a designated efficient fume cupboard prior to chemical degradation. Research workers using microorganisms should obtain a copy of the document 'Safe Working with Micro-organisms' from the School Biological Safety Supervisor.

Biohazardous material may only be used in laboratories designated for such use and with specific protocols approved by the University Safety Office.

Chemicals - see also Potent Carcinogens, Repro-Toxicity, Waste Disposal **and specific entries in Section 8 - Safety Information.**

Under the Control of Substances Hazardous to Health (COSHH) Regulations (2002) a risk assessment must be made before hazardous chemicals can be used. Guidance is available from the University safety office <http://www.safety.ncl.ac.uk/coshhriskassessment.aspx> . The supervisor of a research worker, technician, undergraduate project student, etc. or the principal investigator of a research group should discuss the contents of the form and it must be signed by the supervisor (or her/his nominated substitute), and all appropriate personnel should keep a copy. Safety inspections will include the monitoring of the working of this scheme.

The use of particularly dangerous chemicals may be further restricted by UK, University, or School rules. Chemicals with unknown hazards should be treated with great caution. Some assessment may often be made from knowledge of similar compounds.

Guidance for using certain chemicals are given in Section 8: The list given is far from comprehensive: a COSHH risk assessment should identify potentially dangerous chemicals or mixtures of chemicals. Substitution for a less hazardous material should always be considered as the first step of risk control.

Cleaners

In laboratories, the cleaners are responsible for attending to floors and waste bins only and should not touch anything on benches or tables. Laboratories should be arranged to give safe access for cleaners. It is a general requirement that the risk assessment of hazardous operations should take into consideration how the operation impinges on the activities of others, including cleaning staff.

Compressed gases

Compressed gases such as argon, hydrogen, oxygen and nitrogen are only to be used from safely clamped cylinders, which should be located away from doors and stores of chemicals or solvents. Permanent apparatus dependent on such gas supplies should be connected with leak-proof gas lines. Suitable precautions should be taken for the use of other gases (*e.g.* from small cylinders) and these must be kept away from corrosive sources in a well ventilated place, or in a fume cupboard if at all toxic. Academic Staff who obtain special gases must supervise their use and arrange the disposal of waste gas and empty cylinders (see entry on the use of acetylene).

Computers / Display Screen Equipment

All staff who use display screen equipment (*e.g.* computers, VDUs) for an average of more than two hours per day, or between one and two hours of intensive use, are classified as 'Users' and must register with the Display Screen Equipment Assessor. Advice about minimising risk and improving comfort when using display screen equipment is also available from the Display Screen Equipment Assessor.

Contractors

In this context 'contractors' refers to people not employed by the University who are brought into the School to do a particular job, *e.g.* service equipment (photocopiers, analytical instruments, etc.). These guidelines describe the responsibilities of staff engaging contractors and they must be adhered to. The Technical Services Manager must be consulted before contractors are engaged. Upon arrival in Chemistry all outside workers **must** report to one of the following: the Technical Services Manager, a technician, or the member of staff in charge of the area where work is to be done.

COSHH Regulations - see Chemicals

Disabled persons

Persons with physical disabilities should make themselves known to the School Safety Officer who will prepare a Personal Emergency Evacuation Plan (PEEP) for the individual / group concerned . Those who cannot use the stairs unaided should ensure that there is always someone available to help them out of the building in case of emergency evacuation. Evac chairs are available (main stairwells, on most floors) for use in emergencies.

Disposal of Chemicals -see Waste Disposal

Electrical apparatus must be suitably fused and maintained with the help of the appropriate electrical / electronic workshop technician, who will also test portable apparatus and attach a dated label. Electrical flex should be frequently and carefully examined to ensure no damage that could expose live wires (heater/stirrers are especially prone to such damage!). Check that any plug you use is securely attached to the flex by the retaining screws or clamps. All electrical repairs must be carried out by the electrical workshop technician. (see also PAT in Section 6)

Emergency evacuation - See Emergencies (Page 1)

Eye Protection

Eye protection is compulsory in all designated areas.

Eye Washes

Eye wash facilities must be checked on a regular basis to ensure no contamination. (mains facilities by flushing for 2 minutes weekly).

First Aid - see Emergencies on Page 1 for list of School First Aiders

First Aid boxes are provided and contents must be checked monthly and replenished accordingly. Details of First Aid training can be obtained from the School Safety Officer. Users of cyanide, hydrofluoric acid and phenol must ensure that they are fully conversant with the regulations applying to these substances and have access to appropriate antidotes and they must attend the Chemical Safety Training Course provided by the University Safety Office.

Food

Food and beverages brought into Chemistry **must not** be kept or consumed in laboratories. Cups and other utensils **must not** be brought into laboratories. Electric kettles should be used for heating water.

Glass Bins - see also Waste Disposal

Broken glass must be placed in appropriately labelled receptacles. Such glass must be free of any contaminating chemical waste and all labels must be removed. The bins must not be filled more than $\frac{3}{4}$ full. One person from each research lab should be responsible for emptying the glass bins.

Note : Some solvent bottles are recyclable, please contact the Stores for specific details.

DO NOT ATTEMPT TO RETRIEVE ITEMS FROM A GLASS BIN .

Heaters

Space (electrical convection or fan) heaters **must not** be used in laboratories unless they are spark-proofed. All heaters, including those in offices, are subject to PAT and should be reported to Mr A. Crawford.

Insidious Gases (CO, H₂S)

Work with these gases must not be undertaken without a written protocol, agreed by the School Safety Officer, and appropriate audible warning detectors in place.

Late Working - see Work Outside Normal Hours

Lasers - See Radiation Protection

Leaving Form - see Appendix IV, see also Permit to Work in Chemistry.

Upon completion of the project, contract or studentship, workers are obliged to leave their work areas in a clean, safe, and tidy condition and arrange for unwanted chemicals to be disposed of in accordance with School procedures (see Waste Chemicals). It will be necessary for a Leaving Form to be signed by the supervisor to confirm that this is the case before the deposit can be returned to the worker.

Liquid nitrogen

Liquid nitrogen is obtained from Dewar tanks located in specific parts of the building with the help of authorized personnel. Goggles and gloves must be used in all manipulations. Extreme care should be taken in dispensing, carrying and using liquid nitrogen.

Mercaptans

Research supervisors must register with the School Safety Officer any co-worker as a user or potential user of volatile mercaptans. Whenever mercaptans are to be used, the worker must follow the procedure outlined below:

- A 'Mercaptans' file has been placed (next to the late working file) on a table near the Porter's Lodge. When someone is going to use any gaseous or liquid mercaptan (thiol), hydrogen sulphide (see also Insidious Gases), etc. they must fill in an appropriate form and place this at the front of the file. This procedure applies where such substances are intermediates, products or by-products.
'Dead' forms will be removed.

Note: Staff are encouraged to use non-volatile, non-odorous mercaptans:

e.g. 2,6-dimethoxybenzene thiol, cysteine derivatives where possible (advice on these is available from the School Safety Officer). Chemical traps (*e.g.* bleach) should be used if release of a mercaptan is a possibility.

Overnight Experiments and Services - See Unattended Experiment Procedure.

Permit to Work in Chemistry- see Appendices I and II

All staff, students and visitors must obtain and complete a Chemistry Permit to Work before starting work. The form for new staff and students is entitled 'Permit to Work and Key Deposit'; and for existing workers 'Permit to Work'.

Signatures from the supervisor, financial administrator and finally the Head of School must be obtained to authenticate the permit.

Personal Protective Equipment

Personal protective equipment must be used when required by a risk assessment. Safety spectacles, goggles, face shields, gloves, safety screens and laboratory coats are available, and other means (aprons, footwear) obtained if deemed necessary for the operation in question. Appropriate personal protective equipment should be available for visitors, contractors etc.

It is a requirement that safety spectacles and laboratory coats are worn in teaching laboratories at **all times**. Safety spectacles and laboratory coats **must** be worn when chemicals are being handled and when others in the vicinity are handling chemicals. Laboratory coats should be removed when leaving laboratories. It is a requirement that eye or face protection is worn where evacuated glassware or pressure equipment is being used. Safety spectacles are to be worn in workshops whenever there is a risk of eye injury. Overspectacles should be worn over spectacles, or satisfactory prescription safety spectacles should be worn .

Staff who carry out welding, or are exposed to similar risks, should ensure that overalls or laboratory coats are worn which are made of material suitable for the purpose.

Laboratory coats should be laundered regularly.

Potent Carcinogens - see also Chemicals, Repro-Toxicity

All potent carcinogens and users of carcinogens should be registered with the University Safety Office, guidance is available at <http://www.safety.ncl.ac.uk/carcinogenregistration.aspx>

It will be necessary to provide a COSHH risk assessment, a completed registration form, and protocol details before registration can proceed. Periodic inventories of potent carcinogens held in Chemistry should be made.

All waste carcinogenic material must be identified as such and its disposal by incineration arranged via the laboratory technical staff.

Radiation Protection (including lasers and UV lamps)

All members of staff or students engaged in work with ionising radiation or with radioactive substances must conform to the University's Local Rules and the Department of the Environment's *Code of Practice for the Protection of Persons Exposed to Ionising Radiations in Research and Teaching*. This also applies to all apparatus in which electrons are accelerated by voltages greater than 5 kV and such equipment must be registered with the University Radiation Protection Officer (URPO). Anyone wishing to carry out experiments using radioisotopes should contact the School Radiation Safety Supervisor.

Personnel using **lasers** are subject to the provisions of the Local Rules governing laser radiation and to the *Code of Practice for the Protection of Persons Exposed to Laser Radiation in Universities*. Radiation and laser workers are formally registered with the University and those intending to carry out such work should, in the first instance, consult the School Laser Protection Officer. The use of laser pointers in lectures is restricted to those of less than 2 mW power, unless special shielding is arranged.

Other equipment, *e.g.* ultraviolet lamps, may emit dangerous radiations and all the necessary precautions for the safety of personnel using these must be enforced. The University Local Rules governing the use of UV radiation require registration of all UV equipment with the URPO; this should be done through the School UV Protection Officer.

Radioactive chemicals - see also Radiation Protection

Radioactive chemicals may only be used in designated areas, and after consultation with the Radiation Protection Supervisor. Records of the amounts of such materials must be kept and the disposal of any unused or waste material arranged via the University Radiation Protection Officer.

Refrigerators

Refrigerators used for chemical storage must be spark-proof. All chemicals in refrigerators must be in closed containers.

Repro-Toxicity

Some chemicals are toxic to the male and/or female reproductive system. Information and procedures relating to such substances are described in 'Safe Working with Chemicals in Laboratories' and the Royal Society of Chemistry Professional Brief entitled 'Reproductive Risks of Chemicals at Work'; copies of this can be obtained from Chemical Hazards Advisor Carcinogens Advisor or the University Safety Officer.

Safety Signs

Compliance with blue safety signs is mandatory throughout Chemistry. Please take note of other warning or alerting signs as appropriate.

Safety Spectacles - See Personal Protective Equipment

Safety Training

All members of Chemistry (except undergraduate students who receive a specifically prepared document) are issued with a copy of University Safety Policy and with this booklet. All persons working in Chemistry must attend safety lectures when requested to do so. Information about these can be obtained from the School Safety Officer. Further safety training for staff and students should be provided by their supervisor as appropriate. In addition the School Safety Officer can provide details about a variety of training courses that are provided by the University Safety Office.

Security

Only the Main Entrance door (by the Porter's Lodge) is open during working hours. All other outer doors are locked. At weekends, during holidays and after 5.30 pm on weekdays the Main Entrance door will also be locked. Keys to the Bedson Building must be returned on termination of appointment (see also Permit to Work).

Sharps - see also Glass Bins and Waste Disposal

Used scalpels, needles, etc. must be placed in 'sharps bins' for appropriate disposal. Glass Pasteur pipettes, which have been thoroughly washed out, should be placed in glass bins.

Smoking

Smoking is not permitted on Campus.

Students - see also Supervision of Students.

Students have a responsibility to work safely and not to endanger others. They must not undertake hazardous work without the knowledge and approval of their supervisor. Students will be forbidden from entering laboratories if they are deemed unfit for laboratory work and such incidents will be referred to the Head of School. On no occasion must students perform unauthorised experiments or remove chemicals or items of equipment from Chemistry.

Supervision of Students.

Staff must be able to demonstrate they have exercised an effective supervisory role and must ensure that

- All risks are properly assessed.
- Precautions are agreed between the Supervisor and student. In all but the most elementary circumstances they should be committed to writing.
- Regular checks are carried out by the supervisor to see that the student is following the agreed procedures.
- It has been made clear to the students that alterations in method must be discussed and documented, never casually introduced without the supervisor's knowledge, and that the students have legal responsibilities not to endanger themselves and others by their actions.

Technicians

Technicians must make themselves aware of the hazards and risks associated with their work and implement appropriate control measures. They must not be asked to carry out any task that research workers are unwilling to do themselves for reasons of safety.

Teratogens - see Repro-Toxicity

Thiols - see Mercaptans

Ultraviolet lamps - see also Radiation Protection

Ultraviolet lamps used for photochemical experiments must be efficiently shielded and lamps used for observing chromatograms must not be viewed with naked eyes. All sources of UV radiation must be registered with the University Radiation Protection Officer (contact the UV Protection Officer).

Unattended Experiment Procedure

No experiment is to be left on overnight without completing an Unattended Experiment Form (forms available from Stores). The researcher concerned and the supervisor, or deputy, should be available for consultation during the duration of the experiment.

Information

The form should state clearly the following:

- An equation of the reaction and/or brief details of the process involved (including reaction temperature and solvent)
- Instructions about what should be done in an emergency
- The research worker's name and telephone number
- The supervisor's signature
- The name and telephone number of the supervisor
- The name of the School Safety Officer

Procedure

Overnight experiments must be in operation and ready for inspection by the supervisor by 4.30 pm. One copy (yellow) of the completed form, signed by the supervisor, should be placed on the fume cupboard sash, another (green) placed in the box by the Porter's Lodge by 5.00 pm. The white copy should be posted on the laboratory door. The night patrol staff are instructed to turn off all services unless they are in receipt of the appropriate form.

Water supply

Unless running water is needed for an overnight experiment all taps should be turned off before a laboratory is vacated. When it is necessary to leave a tap running then a thorough check of the equipment should be made before leaving. Flexible piping should be kept to a minimum. All such piping must be in good condition; suitable clips used to secure tubing. Outlet pipes should be securely clamped down the drain hole.

Visitors

Casual visitors **must not** be entertained in laboratories. If it is necessary for a visitor to enter a laboratory they should be provided with safety spectacles and other personal protective equipment as necessary.

Waste disposal

Waste in Chemistry is considered under the following headings and the appropriate arrangements for disposal must be strictly adhered to:

Laboratory waste

a) Chemicals

Guidance is provided by the University Safety Office at:

<http://www.safety.ncl.ac.uk/wastemanagement.aspx>

Members of staff who sanction the purchase of chemicals are responsible for their safe storage, use and disposal.

Each laboratory, group or Section (as appropriate) should establish a system for dealing with chemical waste along the following lines: Separate containers should be available for different types of waste (for solvents see Solvents below). Waste should be properly labelled, the label should indicate the type of waste [e.g. for solvent used for chromatography 'ethyl acetate (approx. 30%) and petrol (approx. 70%)'], the origin (e.g. lab 6.23) . Waste which is highly flammable must be kept in fire resistant cabinets. Waste should be disposed of promptly. Chemical waste should be delivered to the waste handling area in room 2.20 .The technicians are responsible for organising the collection and disposal of chemical waste from laboratories.

Anything (paper, cloths, etc.) that is contaminated with chemicals must be treated as hazardous chemical waste.

Drains must not be used for the disposal of chemical waste. The majority of materials are not suitable for disposal by this route and to do so would contravene the requirements of the Water Authority. It is understood that trace amounts of organic and inorganic substances may remain in aqueous washings, which can be flushed down the drains, but all reasonable steps should be taken to minimise these quantities and to ensure that effective dilution takes place. (Note that this requirement to minimise quantities applies to the use of water vacuum pumps; Cardice traps must be used when volatile solvents are being removed, e.g. diethyl ether and dichloromethane, and the collected solvent disposed of by the approved route).

b) Clinical

Laboratories designated for the use of bio-hazardous material must have specific protocols for the collection and disposal of waste, with arrangements approved by the University Safety Office.

c) Disposables and sharps

Laboratory disposables (plastics, gloves, etc.) and sharps (needles, scalpels, etc.) must be placed in appropriately labelled containers, provided in research group areas and teaching laboratories, for disposal in the yellow clinical waste skip outside of the building, the key to which is readily available from the technical staff in laboratory 2.20.

c Glass

Thoroughly cleaned and unlabelled laboratory waste glass should be placed in appropriate glass bins for disposal. Each group/laboratory should identify someone who will be responsible for ensuring that this system is operated in their area.

d Metal containers

Metal containers (e.g. secondary packaging) should have labels removed or obscured and be put in the appropriate wheelie bin. Solvent drums and any other such containers must be rinsed thoroughly before being put outside for collection.

e **Solvents**

The following categories of solvent wastes should be collected separately:

Acetone	Acetone that has been used for rinsing glassware <i>after</i> other chemical residues have been removed. Acetone must be kept separate from chloroform (explosive risk) and chlorinating agent, including bleach (lachrymatory vapour likely).
Alcohols	Methanol, ethanol etc. including mixtures of alcohols.
Chlorinated (halogenated)	Dichloromethane, chloroform etc. <i>including mixtures containing these solvents</i> ; these require efficient high-temperature incineration for safe disposal.
Petrol, toluene and ethyl acetate	Including mixtures of these solvents.
Ethers	Diethyl ether, tetrahydrofuran

Office/domestic waste

Normal office and domestic waste should be placed in the appropriate recycling baskets/bins for removal by cleaning staff. However, glass items (coffee jars, etc.) should be collected separately and taken to a recycle bin.

Water - see also Unattended Experiment Procedures

Connections should be made secure if extended use is contemplated and taps should be turned off immediately when no longer required. Visual indication of water flow or an alarm system must be provided if interruption of the supply would be a hazard.

Work places

Most members of the School have one or more designated places of work which they are responsible for keeping tidy and in safe order. Communal work areas should be left in a tidy and safe condition by successive workers.

Work Outside Normal Hours

The University Health and Safety policy document gives detailed instructions relating to ['Work Outside Normal Hours'](#) which must be adhered to.

In addition the School policy, which is subject to monitoring and review for work outside normal hours is given below:

- 1 For the purposes of this policy '*work outside normal hours*' refers to working in Chemistry outside the hours Monday - Friday 9.00 am - 5.30 pm (workdays) and at weekends and University holidays.
- 2 No student may work outside normal hours without permission of the Head of School. For postgraduates, this permission is automatically given provided that the permit to work agreement has been completed.

For undergraduates, any laboratory work after 5.00 pm must be under the direct supervision of an academic member of staff. For project students, permission to work outside normal hours may be given via the supervisor.

- 3 Hazardous procedures must not be performed at any time unless a suitable risk assessment has been carried out, the worker has been trained in the relevant operations, and provision is made for the appropriate level of supervision.
- 4 For laboratory work the supervisor must indicate, *in writing*, if he/she gives permission for a particular research student or postdoctoral worker to perform a specified procedure outside normal hours, and the level of supervision to be provided. For procedures involving chemicals this could be conveniently indicated on the COSHH form.
- 5 ***No work involving laboratory hazards is allowed unless another “appropriately skilled” person is within call.***
- 6 Anyone working in the building outside the hours 8.00 am - 6.30 pm (workdays) and at weekends and University holidays must sign in **and out** in the late working file near the Porter's Lodge. **Please ensure the Special Instructions section and the supervisor's telephone numbers is written clearly as well as your name and contact telephone number.**

X-rays - see also Radiation Protection

Such work is conducted under the supervision of Professor W. Clegg and University Local Rules apply (consult Prof Clegg). Users must register with the School Radiation Protection Supervisor.

7. Safety Information

Ampoules

Ampoules should not be opened by inexperienced workers. Seek advice if you are unsure as how to proceed. It is usually best to cool the ampoule in an inert medium: substances which are reactive towards water (e.g. acid chlorides) must not be cooled in ice and/or water. The neck of the ampoule should be scored using a sharp glass knife and (wearing suitable gloves) then broken off. This operation should be done either behind a screen in a fume cupboard, or in a dry-box (take care not to cut rubber gloves). Re-sealing of ampoules should only be performed by an experienced worker (try to avoid the need for this either by using the whole of the contents of the ampoule or by transferring residual material to a suitable container).

Asbestos

If asbestos is found inform the School Safety Officer who will arrange disposal or seek advice from the University Safety Officer.

Chemicals

The following notes are for guidance. Full COSHH assessment must be made for the use of any chemicals.

Acetone

Avoid contact with chloroform (risk of explosion, or chlorinating agents, forms lachrymatory compounds).

Azides

Sodium azide and other azides are potentially explosive. Metal spatulas should not be used for handling such compounds and contact with halogenated solvents should be avoided.

Borane-tetrahydrofuran reagents

When using borane-tetrahydrofuran release pressure which may have built up in the container by cautiously inserting a hypodermic needle through the serum cap.

Carbon monoxide (see Insidious gases - Section 7)

Cyanides

Emergency procedures following cyanide spillage/release are covered in the Chemical Safety Training Course: details from the School Safety Officer. Note that no antidotes, other than oxygen (by trained personnel - see end of Manual), should be administered in the event of cyanide exposure. Cyanide salts must be stored under lock and key (see the Organic Technicians). A standard requisition form, signed by a member of staff, stating the amount of material required should be presented. A copy of the COSHH form and protocol for the work should be agreed by the School Safety Officer before work commences.

Hydrofluoric acid

Special apparatus is needed for users of hydrofluoric acid and the antidote (*calcium gluconate gel*) must be available. Information and training for users is covered in the Chemical Safety Training Course: details from the School Safety Officer.

Hydrogen Sulphide (see Insidious gases - Section 7)

Metal hydrides

Metal hydride residues should be degraded by appropriate methods as soon as reasonably practicable (such disposal procedures require a risk assessment).

Perchloric acid and Perchlorates

Perchloric acid may explode when in contact with organic materials; alternatives should be used where possible. Some metal perchlorates detonate readily. Extreme care should be taken in handling perchlorates and alternatives should always be considered (e.g. tetrafluoroborate salts).

Phenol

The antidote (*polyethylene glycol 300 / mentholated spirits 70:30*) must be available. Information about training for users is covered in the Chemical Safety Training Course: details from the School Safety Officer.

Phosgene

Triphosgene (commercially available) should be used whenever possible in place of phosgene. The hazards are the same for triphosgene and phosgene but the former is safer to use because it is a solid.

Pyrophoric Materials

Solutions of alkyl lithiums and aluminium alkyls should be handled under nitrogen or argon atmospheres. Guidelines for this can be found in *The Manipulation of Air Sensitive Compounds*, D F Shriver and M A Drezdson, 2nd edition, Wiley, New York, 1986 and in *Aldrichimica Acta*, 1986, **19**, 31. Avoid storing empty, or nearly empty containers of these reagents. Lithium and aluminium alkyls should be disposed of by addition to a solution of propan-2-ol in dry petrol under an inert atmosphere (such disposal procedures require a risk assessment).

Cuts, abrasions and broken skin

It is advisable to ensure that any cuts or abrasions are covered when working in the laboratory. Immediately report any minor injuries to a first aider.

Fire extinguishers

Fire extinguishers, fire blankets and fire hoses are sited in strategic positions around the School and everyone should know the whereabouts of fire fighting measures in their work areas. There are restrictions on the type of extinguisher that can be used in some circumstances; in particular water should not be used on electrical fires. The types of extinguisher in the School and the fires for which they can be used, are listed below:

Note: The colour given in brackets is the old code. *New extinguishers will all be red but with the handle and an information panel in the colour indicated.*

Carbon dioxide (black)	Produces a high pressure stream of carbon dioxide gas which should be directed at the base of the fire. A general purpose extinguisher for laboratory use, <i>but is ineffective</i> against alkali metals.
AFFF (beige/cream)	Aqueous Film Forming Foam. Use on general fires (paper, cloth, wood), oil and highly flammable liquids (Do not use on live electrical equipment)
Dry powder (blue)	Releases a stream of fine powder which is used to smother the fire.
Water (red)	Use on general fires (paper, cloth, wood) (NOT to be used for electrical fires or alkali metals)
Sand (red buckets)	Dry sand is effective at smothering small fires caused by alkali metal or metal hydrides. Plastic bags filled with sand when placed on the fire release the sand to smother the fire.
Fire blankets	Effective at smothering clothing fires.
Hose reels	Located in corridors. (NOT to be used for electrical fires or alkali metals)

Manual Handling

Risk assessments (laboratories, offices, workshops, etc.) should take manual handling into consideration. Advice and guidelines about moving heavy objects can be obtained from School Manual Handling Coordinator. The following items of manual handling equipment are available to assist; potential users must obtain permission and instruction from the Manual Handling Coordinator.

Gas cylinder trolleys (in addition to those owned by individual groups or laboratories)
Location: Glassblowers Workshop, Chemistry Stores, Unloading Bay.
Use whichever is most convenient and always return immediately after use.

Mobile Scissor Lifting Tables

- 1 Type SC1125 Manual. This will take a maximum load of 125 kg and lift to a height of 1400 mm.
Location: 2nd Floor Teaching Laboratory .

- 2 Type TZ201 Manual. This will take a maximum load of 200 kg and lift to a height of 920 mm.
Location: Chemistry Stores

Although the use of the scissor trolleys does not require the operator to be specially trained, instruction should be sought before first use and the following points should always be observed:

- Always distribute the weight evenly on the table.
- Always travel with the load in the lowered position.

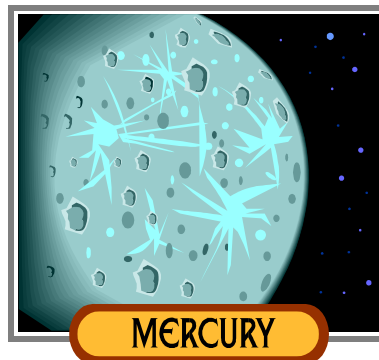
Powered Pedestrian Stacker Model number 1,0 EMT 2350

This machine is commonly known as a 'WALKIE'. There are strict rules to be observed in the use of this type of machine, consequently it is only to be used by trained operators. Should you require use of this machine for bringing in new equipment or moving existing equipment, see the Manual Handling Coordinator.

Mercury

The recovery of mercury that is deemed suitable, or the disposal of waste mercury unsuitable for recovery must be arranged through a technician ..

Where alternatives to mercury are available, they must be considered.



Appendix I



Permit to Work

NAME _____

I have read the Chemistry Safety Handbook and undertake to abide by all safety rules. At the end of my time in the department I undertake to return any Bedson Building keys in my possession and leave my workplace in a clean and tidy condition. Chemical samples will be labeled at all times and unwanted chemicals will be disposed of in accord with school procedures.

SIGNED _____

I request permission for the above-named to work in Chemistry under my supervision.

SIGNED _____

[Supervisor]

I permit the above-named to work in Chemistry.

SIGNED _____

[Head of School]

DATE _____

COPIES TO BE RETAINED BY: WORKER , SUPERVISOR AND HEAD OF SCHOOL

Appendix II



Permit to Work and Key Deposit

NAME _____

I have read the Chemistry Safety Handbook and undertake to abide by all safety rules. At the end of my time in the department I undertake to return any Bedson Building keys in my possession and leave my workplace in a clean and tidy condition. Chemical samples will be labeled at all times and unwanted chemicals will be disposed of in accord with departmental procedures.

SIGNED _____

The above-named has paid a £25 deposit.

SIGNED _____

(P.A. to HOS)

I request permission for the above-named to work in Chemistry under my supervision.

SIGNED _____

[Supervisor]

I permit the above-named to work in Chemistry.

SIGNED _____

[Head of School]

DATE _____

COPIES TO BE RETAINED BY: WORKER, SUPERVISOR, HEAD OF SCHOOL AND FINANCIAL ADMINISTRATOR

Appendix III



Departing Staff, Students and Visitors

NAME _____

The appropriate deposit will be paid to the above-named providing all keys to the Bedson Building are handed to the Financial Administrator and the declaration below is signed by the person's supervisor.

The above-named person's workplace and chemicals have been left in a tidy and safe condition, and all unwanted chemicals have been disposed of in accord with school procedures.

SIGNED _____

[Supervisor]

DATE _____

Note: It is the responsibility of the supervisor to ensure that a person under their supervision leaves their workplace and chemicals in a satisfactory condition. Failure to do so will be regarded as neglect of duty and may lead to the supervisor being charged for clean up, etc.

COPIES TO BE RETAINED BY: WORKER, SUPERVISOR AND HEAD OF SCHOOL

APPENDIX IVa

Newcastle University

COSHH Risk Assessment

A COSHH risk assessment is required for work with hazardous substances including source materials, products, known intermediates and by-products. The form should be completed electronically and approved and signed by the principal investigator or responsible person. Carcinogens and users of carcinogens must both be registered using the Carcinogen Registration forms on the Chemical Safety section of the Safety Office website. Guidance on completing this form is provided in the COSHH Risk Assessment section of the Safety Office website.

Title of project or activity	[ENTER DETAILS HERE]
Principal investigator / Responsible person	[ENTER DETAILS HERE]
School	[ENTER DETAILS HERE]
Date of assessment	dd/mm/yyyy
Location of work (Buildings and room numbers)	[ENTER DETAILS HERE]

Section 1 Project or Activity

1.1: Brief description of project or activity
[ENTER DETAILS HERE]

Section 2 Hazards

2.1: Hazardous substances used and generated			
Hazardous substance	Name	Risk Phrases	Workplace exposure limit (WEL) if applicable
Chemicals	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]
Carcinogens, mutagens or reproductive toxins	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]
Dusts or fumes	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]
Asphyxiants	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]
Other substances hazardous to health	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]

Section 3 Risks

3.1: Human diseases, illnesses or conditions associated with hazardous substances				
[ENTER DETAILS HERE]				
3.2: Potential routes of exposure				
Inhalation	Ingestion	Injection	Absorption	Other
				Select all that apply
[ENTER DETAILS HERE]				
3.3: Use of hazardous substances				
Small scale Plants Maintenance	Medium scale Cleaning	Large scale Other	Fieldwork	Animals
				Select all that apply
[ENTER DETAILS HERE]				
3.4: Frequency of use				
Daily	Week	Monthly	Other	
				Select one
[ENTER DETAILS HERE]				
3.5: Maximum amount or concentration used				
Negligible	Low	Medium	High	
				Select one
[ENTER DETAILS HERE]				
3.6: Potential for exposure to hazardous substances				
Negligible	Low	Medium	High	
				Select one
[ENTER DETAILS HERE]				
3.7: Who might be at risk (*Contact the University Occupational Health Service)				
Staff	Students	Visitors	Public	Young people (<18yrs)
Other	*New and expectant mothers			
[ENTER DETAILS HERE]				
3.8: Assessment of risk to human health (Prior to use of controls)				
Level of risk	Effectively zero	Low	Medium/low	Medium
	High			
				Select one
3.9: Assessment of risk to environment (Prior to use of controls)				
Level of risk	Effectively zero	Low	Medium/low	Medium
	High			
				Select one

Section 4 Controls to Reduce Risks as Low as Possible

4.1: Containment				
Laboratory Glove box Fume cupboard Other	Room Local exhaust ventilation (LEV)	Controlled area	Total containment Access control	
				Select all that apply
[ENTER DETAILS HERE]				

4.2: Other controls						
[ENTER DETAILS HERE]						
4.3: Storage of hazardous substances						
[ENTER DETAILS HERE]						
4.4: Transport of hazardous substances						
[ENTER DETAILS HERE]						
4.5: Personal protective equipment (PPE)						
Lab coat	Overalls	Chemical suit	Disposable clothing			Select all that apply
Apron	Spectacles	Goggles	Face shield			
Gloves	Special headwear	Special footwear	Other			
[ENTER DETAILS HERE]						
4.6: Respiratory protective equipment (RPE)						
Disposable mask respirator	Filter mask	Half face respirator	Full face respirator			Select all that apply
Powered respirator	Breathing apparatus	Other				
[ENTER DETAILS HERE]						
4.7: Waste management and disposal						
Liquid	Solid	Gas	Inorganic	Organic	Aqueous	Mixed
Other [ENTER DETAILS HERE]						
4.8: Monitoring exposure						
[ENTER DETAILS HERE]						
4.9: Health surveillance (If you need advice contact the University Occupational Health Service)						
[ENTER DETAILS HERE]						
4.10: Instruction, training and supervision						
Special instructions are required to safely carry out the work (If yes enter details below)						Yes
[ENTER DETAILS HERE]						
Special training is required to safely carry out the work (If yes enter details below)						Yes
[ENTER DETAILS HERE]						
A: Work may not be carried out without direct personal supervision (If yes enter details below)						Yes
B: Work may not be started without the advice and approval of supervisor (If yes enter details below)						Yes
C: Work can be carried out without direct supervision						Yes
Supervisor(s)	[ENTER DETAILS HERE]					

Section 5 Emergency Procedures

5.1: Emergency procedures	
[ENTER DETAILS HERE]	
5.2: Minor spillage or release	
Specify procedure	[ENTER DETAILS HERE]

Other actions	Evacuate and secure laboratory / area	Yes			
	Inform competent person (eg principal investigator / school safety officer etc)	Yes			
5.3: Major spillage or release					
Specify procedure	[ENTER DETAILS HERE]				
Other actions	Evacuate building by fire alarm	Yes			
	Call security and fire brigade (6666 on campus)	Yes			
	Inform competent person (eg principal investigator / school safety officer etc)	Yes			
5.4: Fire Precautions					
Carbon dioxide	Water	Powder	Foam	Blanket	Automatic fire suppression
Other					
[ENTER DETAILS HERE]					
5.5: First aid					
Wash with copious amounts of water and apply polyethylene glycol (PEG) 300 for phenol		Wash with copious amounts of water and apply calcium gluconate gel for hydrofluoric acid		Wash with copious amounts of water and apply calcium gluconate gel for hydrofluoric acid	
clothing and wash with copious amounts of water for skin contact		Oxygen for cyanide		Eye	
wash station	Emergency shower	Other			
[ENTER DETAILS HERE]					
5.6: Emergency contacts					
Name		Position		Telephone	
[ENTER DETAILS HERE]		Principal Investigator / Responsible person		[ENTER DETAILS HERE]	
[ENTER DETAILS HERE]		[ENTER DETAILS HERE]		[ENTER DETAILS HERE]	

Section 6 Approval

6.1: Assessor		
Name	Signature	Date
[ENTER DETAILS HERE]	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]
6.2: Principal investigator / Responsible person		
Name	Signature	Date
[ENTER DETAILS HERE]	[ENTER DETAILS HERE]	[ENTER DETAILS HERE]

Risk Estimation Matrix

Severity of harm	Likelihood of harm			
	High	Medium	Low	Negligible
Severe	High	High	Medium	Effectively zero
Moderate	High	Medium	Medium/low	Effectively zero
Minor	Medium/low	Low	Low	Effectively zero
Negligible	Effectively zero	Effectively zero	Effectively zero	Effectively zero

Unattended Experiment Form

WARNING NOTICE

UNATTENDED EXPERIMENT

BUILDING:..... SCHOOL:.....

FLOOR:..... ROOM:.....

LOCATION IN ROOM:.....

COMMENCEMENT DATE:.....

APPROX. COMPLETION DATE:

SPECIAL INSTRUCTIONS: (i.e. Action required concerning Power Failure, Fire, Flooding, Overheating, Lights, Ventilation, etc)

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

EMERGENCY CONTACTS:

(a) STAFF MEMBER IN CHARGE OF EXPT: (b) Principal Investigator:

Name:..... Name:.....
Home Tel No: Home Tel No

**THE WHITE COPY SHOULD BE POSTED ON THE OUTSIDE OF THE ROOM CONTAINING THE EXPERIMENT
THE GREEN COPY SHOULD BE SENT TO THE HEAD POLICEMAN OF THE UNIVERSITY POLICE
THE YELLOW COPY SHOULD BE RETAINED BY THE DEPARTMENTAL SAFETY OFFICER**

Appendix IV c



School Of Chemistry

Laboratory Self Assessment Safety Checklist

Laboratory :

Room Number :

Academic in Charge :

Deputy :

Date of Inspection :

Risk Assessments

Is there a written [Risk Assessment](#) for all of the activities carried out in this area ?

Yes / No.

If "No" which ones are lacking?

COSHH Special Assessments

Written [COSHH Assessment](#) for all chemicals used which require it?

Are Data Sheets available? Yes / No

Summary / comment:

Personal Protective Equipment	Items	Good	Satisfactory	Poor	Unacceptable
Hand protection	Lab coats (worn, clean) ?				
	Safety spectacles (available / worn) ?				
	LEV Guidance				
Summary / comment:					

Laboratory Layout and General State	Items	Good	Satisfactory	Poor	Unacceptable
General	Floors				
	Aisles				
	Exits				
	Ceilings				
	Benches				
	Fume hoods				
	Fridges				
	Cupboards				
	Bins				
	Shelves				
	Furniture				
Lighting					
Laboratory / Write Up Areas	Equipment layout				
	Number of occupants / overcrowding				
	Ventilation				
	Separation of work / write up areas				
	Workstation assessments				
Summary / comment:					

Emergency Equipment	State of :	Available	Accessible	Appropriate	In-date
Fire extinguisher training Fire extinguisher info. Safety Notices	Fire extinguishers				
	Fire extinguisher training				
	Fire blankets				
	Fire exits				
	First aid box				
	Eye wash				
	Spill kits				
	Laboratory hazards plan				
	Contact person				
	Telephone number				
	Notices				
Emergency telephone numbers					
Summary / comment:					

Chemicals	Items	Good	Satisfactory	Poor	Unacceptable
General chemical safety information	Amounts				
	Storage facilities				
	Labelling				
	Inventory				
Solvents / Flammable liquids	Amounts				
	Storage				
Waste solvent	Amounts				
	Storage area.				
Summary / comment:					

Glassware / Sharps	Items	Good	Satisfactory	Poor	Unacceptable
Needles / syringes	Amounts				
	Storage				
Broken / Disposable Glass / Sharps	Storage				
Summary / comment:					

Electrical Equipment	Comments							
PAT Testing, <50%, >50%								
Failed/untested equipment in use?	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>		Yes	No				
Yes	No							
Non-compliant custom equipment?	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>		Yes	No				
Yes	No							
Visual Checks Lack of strain relief Damaged mains plugs Damaged mains leads	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td>Yes</td> <td>No</td> </tr> </table>		Yes	No	Yes	No	Yes	No
Yes	No							
Yes	No							
Yes	No							
Mains Distribution Panels Unsecured? Poorly positioned? Daisy Chained?	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td>Yes</td> <td>No</td> </tr> </table>		Yes	No	Yes	No	Yes	No
Yes	No							
Yes	No							
Yes	No							
Mains Extension Cables/ Adaptors 240v mains adaptors in use? Cables too long? Unprotected floor trailing cables?	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td>Yes</td> <td>No</td> </tr> </table>		Yes	No	Yes	No	Yes	No
Yes	No							
Yes	No							
Yes	No							
Summary / comment:								

Laboratory / Office occupants safety concerns

Overall summary / comments

Signed :

Date :

Appendix V

SAFETY PERSONNEL

Head of School of Chemistry

Professor Mike Green room 1.29, ext 8154

Deputy Head of Chemistry

Dr Christine Bleasdale room 3.13, ext 7070

Technical Services Manager / School Safety Officer

Mr Andrew Crawford room 2.16 Ext 7080 home telephone :- 0191 522 7987

home address: Flat 3
110 Queen Alexandra Road
Sunderland
SR2 9AJ

Assistant Safety Officer

Miss Helen Mann room 2.15 Ext 7078 home telephone :- 0191 4145352

home address : 30 May Avenue
Winlaton Mill
Blaydon
Tyne and Wear
NE21 6SF

University Chemical Hazards Advisor:

Dr I R Hardcastle room 3.17, ext 6645 home telephone :- 01434 608901

home address: 1 Osborne Avenue
Hexham
NE46 3JP

Biological Safety Officer:

Dr M A Carroll room 3.03, ext 7074 home telephone :- 01670 712554

home address: 10 Murston Avenue
Cramlington
NE23 3XN

Laser Protection Supervisor:

Prof Anthony Harriman Room G.11, ext 8660

Radiation Protection Supervisor:

Dr M A Carroll (see above) Room 2.06, ext 7074

UV Protection Officer :

Dr M A Carroll (see above) Room 2.06, ext 7074

School Display Screen Equipment Assessor:

Miss Helen Mann Room 2.20, ext 7078

School Manual Handling Co-ordinator:

Mr G Day Mechanical Workshop, B.14, ext. 7064

Portable Appliance Testing Co-ordinator:

Arrangements made with Mr Andrew Crawford

First Aiders:

Mrs I Lamb	Room 1.30	ext 7102
Mr James Dyson	Laboratory 2.20	ext 7078
Miss Helen Mann	Laboratory 2.20	ext 7078
Mrs Zuleykha McMillan	Room 2.18	ext 6924

Personnel Trained in Oxygen Resuscitation

Prof M North	Room 3.16	ext 7128
Miss Helen Mann	Laboratory 2.20	ext 7078

Personnel trained in defibrillation

Mrs Zuleykha McMillan	Room 2.18	ext 6924
Miss Helen Mann	Laboratory 2.20	ext 7078
Mr James Dyson	Laboratory 2.20	ext 7078
Mrs I Lamb	Room 1.30	ext 7102