

UNIVERSITY OF NEWCASTLE UPON TYNE



**School of Chemical Engineering & Advanced
Materials
Merz Court**

Health and Safety Handbook

August 08

CONTENTS

1	EMERGENCIES	4
1.1	Emergency Contact Numbers.....	4
1.2	Emergency Procedures	4
1.3	Emergency Evacuation	6
1.4.1	Provision for Disabled Persons.....	7
1.4.2	Contractors	7
1.4.3	'False Alarms'.....	8
1.4.4	Outside Normal Working Hours	8
2	Introduction	9
2.1	Web Site Addresses	9
2.3	School Policy Statement.....	10
3	Safety Management in the School of CEAM.....	11
3.1	Head of School	11
3.2	School Safety Committee	11
3.3	Academic Staff.....	12
3.4	Clerical Staff.....	12
3.5	Technicians.....	12
3.6	Other staff, students, persons having occasion to work in the School.....	12
4	Safety Advice in the School of CEAM.....	13
4.1	University Advisors	14
4.2	Visitors	14
4.3	Visiting Workers	14
4.4	Safety Consultation.....	14
4.5	Risk Assessment	14
5	Additional Advice for Undergraduate Students	14
6	Chemicals and Laboratories	15
6.1	Chemicals.....	15
6.1.1	Procedures.....	15
6.1.1.1	COSHH.....	15
6.1.1.2	Risk Assessment Form.....	16
6.1.1.3	Hazard Data Sheet.....	16
6.1.2	Potent Carcinogens	16
6.1.3	Repro-Toxicity.....	16
6.1.4	Ampoules.....	17
6.2	Laboratories.....	17
6.2.1	Personal Protective Equipment.....	17
6.2.2	Radiation Protection including Ultraviolet Lamps and Lasers.....	17
6.2.3	Unattended Experiment Procedure.....	17
6.2.4	Laboratory Waste.....	18
6.2.5	Compressed Gases	19
6.2.5.1	Insidious Gases	20

6.2.5.2	Acetylene	20
6.2.6	Refrigerators	20
6.2.7	Fume Cupboard Testing	20
6.2.8	Biological Safety	23
7	Safety and Monitoring Procedures'	23
7.1.1	Safety Training.....	21
7.1.2	'Self Inspections'.....	21
7.1.3	Out of Hours Working	21
7.1.4	Accidents	22
7.1.5	Asbesto	22
7.1.6	Cleaners.....	22
7.1.7	Computers/Display Screen Equipment	24
7.1.8	Contractors	24
7.1.9	Disabled Persons.....	23
7.1.10	Electrical Safety	24
7.1.11	Eye Washes.....	24
7.1.12	First Aid Boxes.....	24
7.1.13	Food.....	24
7.1.14	Heaters	24
7.1.15	Identification Badges.....	24
7.1.16	Leaving Form	25
7.1.17	Manual Handling.....	25
7.1.18	New Projects.....	25
7.1.19	Portable Appliance Testing (PAT).....	25
7.1.20	Rotating Machinery	25
7.1.21	Safety Signs.....	26
7.1.22	Safety Training.....	26
7.1.23	Security	26
7.1.24	Smoking.....	26
7.1.25	Students.....	26
7.1.26	Supervision of Students	26
7.1.27	Teaching and Research.....	26
7.1.28	Technicians.....	27
7.1.29	Visitors	27
7.1.30	Water Supply	26
7.1.31	Work Places.....	27
7.1.32	Workshop.....	27

Appendix

Appendix 1.....	CEAM Safety Personnel.....	30
Appendix 2.....	Fire Warden Cover	29
Appendix 3.....	Visiting Workers Registration Form	32
Appendix 4.....	Laboratory Self Inspection Check List	34
Appendix 5.....	Permit to Work and Key Deposit	40
Appendix 6.....	Departing Staff, Students and Visitors.....	41
Appendix 7.....	Out of Hours Declaration	40
Appendix 8.....	Unattended Experiment Form	41

Supplementary documents are available dealing with specific issues: (See the School Safety Officer, Professor A Wright and Dr J Glassey, Biological Safety Officer.)

A copy of this Safety Booklet is available on the School of Chemical Engineering & Advanced Materials Web Site. (See page 30)

Forms referred to in this document are also available from the web site

Form	Use
Appendix 3	Visiting workers registration form <i>Available from School Office</i>
Appendix 4	Laboratory self inspection checklist <i>Available from School Office</i>
Appendix 5	Permit to work and key deposit <i>Available from School Office</i>
Appendix 6	Departing staff, students and visitors <i>Available from School Office</i>
Appendix 7	Out of hours working declaration <i>Available from School Office</i>
Appendix 8	Unattended experiment form <i>Available from laboratory technical staff</i>

1 EMERGENCIES

1.1 *Emergency Contact Numbers*

FIRE - POLICE - AMBULANCE

- Dial Internal 6666 [if no response, dial External 9-999]
- If unsuccessful with above, use emergency Red Telephone outside the Students Common Room on the ground floor, (up from the Porters Lodge) which is connected directly to the House Services Office.
- Head of Security Dial ext 6345
- University Security Office Dial ext 6817 (Security.control@ncl.ac.uk)

WORKS SERVICES

- Dial ext 7171
- Out of hours ext 6817

FIRST AID

Merz Court Building 'First Aiders'

- Mr R Dixon - C114 1st floor Ext. 5202
- Dr Mark Willis room C303 3rd floor beside general office Ext. 7242

For immediate medical treatment of "walking wounded" for more than superficial injury and any exposure to chemicals go, or take the victim, directly to the Minor Injuries Unit of the RVI or to Newcastle General Hospital.

For more serious injury or in cases of doubt CALL AN AMBULANCE.

1.2 *Emergency Procedures*

FIRE

In the event of fire

- Sound the alarm. Without endangering yourself, try to put the fire out. If unsuccessful leave.
- Report to the Fire Marshal based at the Fire Assembly Point, by the green facing the Beehive Building (opposite Merz Court).

On hearing the alarm

- Leave the building immediately, but calmly, using the nearest fire exit. Close all doors behind you.
- In the event that evacuation via the front of the building is blocked, evacuation should take place via the rear of the building. Fire marshals may need to direct you through unfamiliar escape routes. Please follow their instructions and assemble as above.
- Do not use the lifts.
- Do not search for the seat of the fire or for the cause of the alarm sounding.

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/ risk assessment forms 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 Fire Marshal based at the Fire Assembly Point.
- If evacuation is not deemed necessary report the incident to a member of staff and the Safety Officer or member of the CEAM safety committee (section 4.2 p11) who will assume control.
-

SUSPECTED BOMB

In the event of finding a suspicious package being found:

- (a) Do not touch and leave well alone
- (b) Immediately contact the persons listed below for further guidance;

Mr S. Daley Ext. 5970

Mr. R. J. Dixon Ext. 5202 / 3907

Mr S. Latimer Ext. 5746 / 7263

Mr. Paul Sterling Ext. 5202 / 3907

1.3 Emergency Evacuation

On hearing the alarm, the Fire Marshal, or his deputy will

- Ring 6666 to summon the Fire Brigade without delay unless informed immediately that there is no fire or other emergency.
- Take up station at the Fire assembly Point, immediately outside the Beehive Building.

On hearing the alarm, the Fire Wardens, or their deputies will

- Check their assigned areas to ensure that everyone has left.
- Report to the Fire Marshal, who will be stationed outside the main entrance.

It is the duty of the Fire Wardens to check their assigned areas (laboratories, offices, etc.), to ensure that everyone has left and then report to the Fire Marshal who will be stationed outside the main entrance.

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 the Fire Marshal that they were not able to assist with the evacuation of the area assigned to them.

On hearing the alarm, the School Safety Officer will

- take up station next to the Fire Marshal.
- Check whether the Fire Brigade has been summoned.

In the event of the absence of all the above staff; the first member of 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 Fire marshal or 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.

1.4 Location of Merz Court

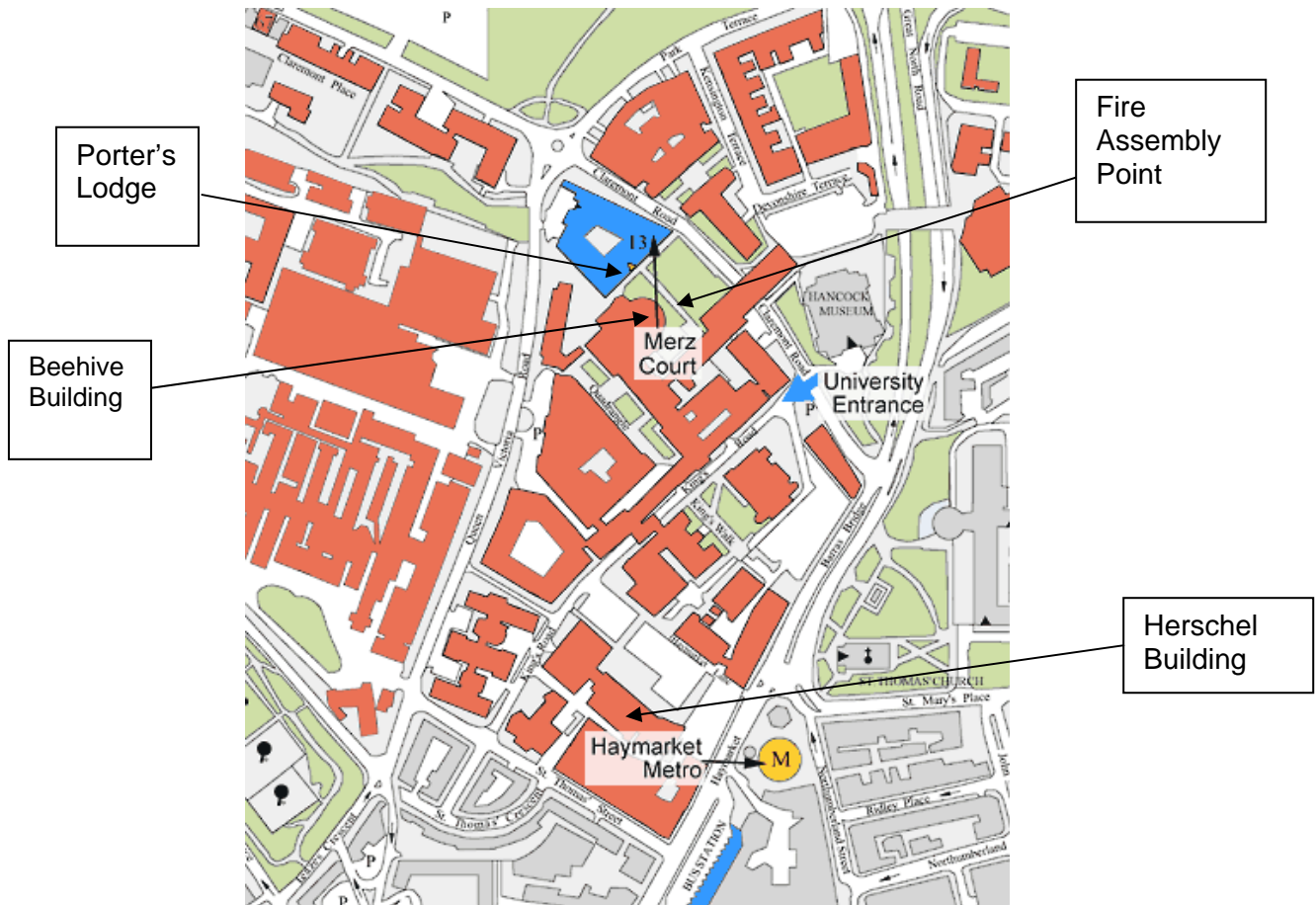


Figure 1 Map of the area surrounding the Merz court Building, showing the Fire Assembly Point and the entrance to the Porters Lodge

1.4.1 Provision for Disabled Persons

Persons with physical disabilities should make themselves known to the School Safety Officers who will discuss with them the evacuation procedures in the event of an emergency. A personal emergency evacuation plan (PEEP) will be submitted on application by each student.

1.4.2 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 as soon as possible.

1.4.3 'False Alarms'

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

1.4.4 Outside Normal Working Hours

(5.30 pm - 8.00 am, weekends and holidays)

In the event of any emergency

- Sound the alarm.
- Call Security
[6666 or use the Red Telephone outside the Students Common Room on the ground floor, (up from the Porters Lodge) which is connected directly to the House Services Office].
- 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.

2 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 and research associates and research visitors should be introduced to the School Safety Officers for Merz Court. They will also be directed to the University's Safety website where all policy and advice documents are available. Additional documentation relating to the University's rules about micro-organisms, ionising radiation, manual handling, asbestos, contractors, etc. can be obtained from the School Safety Officers.

Undergraduate students are not issued with this document (they each receive 'Health and Safety for Undergraduates'), though it is freely available to them on request. It is the responsibility of academic and technical staff (where appropriate) to ensure, as far as is reasonably practicable, the safety of undergraduate students working in the School.

2.1 Web Site Addresses

University Safety Website

www.safety.ncl.ac.uk/

Location of safety Handbooks:

School Safety Handbook:

<http://www.ncl.ac.uk/ceam/about/safety.htm>

School Biotechnology Handbook

<http://www.ncl.ac.uk/ceam/about/safety.htm>

2.2 School Policy Statement

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.

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 the School's 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 School Safety Officer and members of the School Safety committee, the Biological Safety Officer and Assessor and the Manual Handling Coordinator (Refer to List of Safety Personnel in Appendix 1, page 30). 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.

Each Laboratory/Workshop will be notified of any new H & S information whenever it is relevant.

It is the School of Chemical Engineering & Advanced Materials 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 Officer 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.

Professor Steve Bull
Head of School

August 2008

3 Safety Management in CEAM

The University safety management hierarchy is reproduced from the University's Health and Safety Policy document:

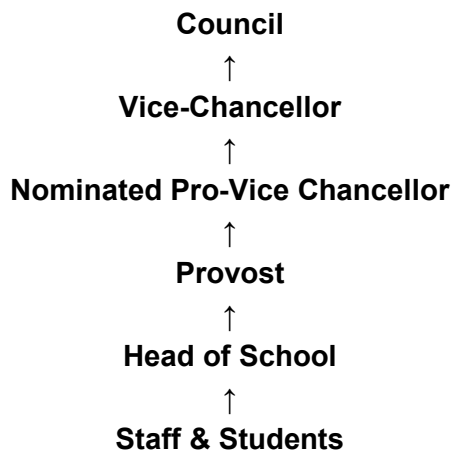


Figure 2 Management of Health and Safety in the University

Each tier of management has a responsibility to ensure that safe practices are being followed in the levels below, and that assurance of this can be given to senior management. The same philosophy applies to health and safety management within the School. Responsibilities are detailed in the following paragraphs. Normal reporting of health and safety matters would be through the line of supervision but direct reporting to the School Safety Officer or the Head of School is open to all members of the School.

3.1 Head of School

The Head of School is responsible for all aspects of health and safety of personnel within the School. He/She makes executive decisions on safety matters and enforces an effective health and safety policy. Health and Safety are as integral to the work of the School as is research or teaching. At the end of each academic year, the Head of School provides the Faculty Provost with a report summarising the School's position and progress on health and safety matters. In this report he/she will set out the objectives for the year ahead.

3.2 School Safety Committee

The aim of the Safety Committee is to advise the Head of School of safety issues arising within the School and to implement the University Safety Policy.

- Professor A Wright (Merz Court)
- Dr E A Charles (Herschel Building)
- Dr J Glassey (Merz Court)
- Mr S Latimer (Chair Person) (Merz Court)
- Mr R J Dixon (Deputy Chair Person) (Merz Court)

Contact details may be found in Appendix 1

3.3 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.

The Research Supervisor(s) are responsible for all his/her researchers and their equipment, irrespective of area control. Supervisors must also ensure that suitable provision has been made for regularly checking the welfare of students when they are working out of hours.

3.4 Clerical Staff

The School Administrator is responsible to the Head of School for Clerical Staff and equipment in the office areas.

3.5 Technicians

The Workshop Supervisor is responsible to the Head of School for Technicians and equipment in the workshop areas and also for the safety of the staff working in laboratory areas, in conjunction with Academic Staff or Research Supervisor(s).

Technicians are responsible for safety in their activities and the activities of other technicians under their supervision. On occasion, they will be required, by academic staff or the more senior technical staff, 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.

Within their areas all the above have the responsibility to:

- Ensure good housekeeping.
- Ensure no blockages of doorways and emergency exits.
- Identify all actual or potential hazards and introduce proper safety measures.
- Provide any written instructions, warnings and signs.
- Ensure that where required, protective clothing is issued and worn.
- Monitor the well-being of persons in the laboratories.
- Provide information and training.

3.6 Other staff, students, persons having occasion to work in the School

All other workers in the School of Chemical Engineering & Advanced Materials have a duty to work safely and not to endanger others.

4 Safety Advice in CEAM

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 Safety Officer

- Advise the Head of School and School staff on safety matters.
- Carry out safety audits within the School.
- Ensure the new members of the School, including students are made aware of the University Safety Policy and the School's safety organisation and arrangements.
- Ensure the proper reporting of any accidents and conduct any necessary investigations.

The School Safety Officer assumes a central role in issues pertinent to the School as a whole and as such will distribute to staff information received from the University Safety Officer and elsewhere as need be. In addition to this role he will also have other support safety staff to help in maintaining safety in the School.

The School Biological Safety Officer has the duty to:-

- Advise the Head of School, the University Biological Safety officer and the School staff on any form of biological hazard.
- Arrange for and record that statutory medical examinations have been carried out.(refer to Occupational Health)

Researchers/Technicians/Clerical Staff are responsible for:

- Understanding and following the instructions of the relevant supervisor.
- Working safely and efficiently.
- Using protective equipment provided.

Invited visitors/Workers are the responsibility of the person inviting them and should be accompanied at all times. They should also report to the School Office (3rd Floor, Merz Court) where they are required to fill in a Visiting Workers Registration Form (Appendix 3, page 32) and be provided with a visitor's pass, which must be worn visibly at all times. The Visiting Workers Registration Forms will be held in the Main Office, Merz Court 3rd floor, (Appendix 1).

In addition to the role outlined above the School Safety Officer, covers Radiation Protection Supervision (including lasers and UV) and is responsible for arranging and monitoring:

- Fire Drills and Procedures.
- Fume Cupboard testing
- Portable Appliance Testing
- and liaising with
- Building services (heating, plumbing, etc.)
- Contractors engaged by the University and School

4.1 University Advisors

The university safety office also provides a number of specialist advisors for consultation:

- Biological safety advisor
- Chemical hazards Advisor (including Potent Carcinogens)
- Radiation Protection Advisor / Radiation Protection Officer

Please refer to the University Safety Office web site.

4.2 Visitors

All Visitors should report to the CEAM general office on the 3rd floor, room C302

4.3 Visiting Workers

Visiting workers must complete a Visiting Workers Registration Form available in the general office on the 3rd floor, room C302 (Appendix 3)

4.4 Safety Consultation

Health and Safety is a standing item on all main committees and meetings of the School, including the School Staff Meeting. In addition, safety issues can be raised with the School Safety Officer by anyone in the school at any time or brought to the attention of any other member of the Safety Committee.

4.5 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. This is 'risk assessment'.

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 and Risk Assessment form is expected for all experimental work.

5 Additional Advice for Undergraduate Students

In the event of an incident (eg accident, spillage etc) please report it to a member of staff immediately.

5.1 Food

Food and beverages brought into the School must not be kept or consumed in laboratories or areas where there is chemical preparation or storage. Smoking is forbidden in all laboratories.

5.2 Glassware

Around half of the accidents in the School are as a result of glass breakages. Glass is fragile and must be handled with care. Never force glass tubing (it is good practice always to keep hands close together when manipulating glass tubing). If in doubt seek advice from staff. Pasteur pipettes are particularly dangerous on account of fragility and flexibility (until they snap). Additional guidelines for handling glassware are available in laboratories.

5.3 Mobile Phones

Mobile phone should be switched off before entering the laboratory.

5.4 Personal Protective Equipment

Safety spectacles and laboratory coats must be worn in the teaching laboratories. Optical spectacles giving good frontal protection are sufficient except for experiments where goggles are specifically required. Wearers of contact lenses should be particularly cautious; spectacles are preferred. Gloves and other personal protective equipment must be worn where this is specified.

5.5 Spillage

Sufficient detailed information concerning the chemicals, including methods for dealing with spillage, should be readily available. Individuals should be aware of the hazards of the materials they are using, and familiar with spillage procedures.

5.6 Visitors

Casual visitors should not be entertained in laboratories.

5.7 Working Hours

No work by undergraduates involving laboratory operations are allowed unless a member of CEAM staff/Researcher is supervising. All undergraduate students should aim to be out of the laboratory by 5pm at the latest. Work outside this time must be agreed with the member of staff in charge who must arrange appropriate supervision.

5.8 Working Methods

- Smoking, eating, drinking, and the application of cosmetics are prohibited in areas where chemical substances are used or kept.

Food, drink etc, can readily become contaminated if kept and used alongside chemical substances. It is then possible to transfer dangerous substances to the mouth or other sensitive areas of the face.

- Inhalation of vapours or skin contact with any substance is to be avoided. In general terms, fume cupboards must be used for substances which are toxic by the inhalation route even though a written COSHH risk assessment may not be required (e.g. substances allocated the risk phrases R23 – ‘Toxic by inhalation’, refer to pages 16-20).
- Work must be performed cleanly with the minimum of spilling and splashing in order to limit contamination. Suitable dispensing aids must be used and substances handled over spill trays, where appropriate.
- Bench tops and laboratory equipment must be cleaned as soon as practicable after use.
This is the responsibility of laboratory staff.
- Contaminated surfaces and equipment must be cleaned without delay.
- Exposure to gases and vapours should be limited by covering vessels, prompt replacement of caps and stoppers to bottles and, if possible, the handling of volatile, gaseous or dusty substances in closed systems.
- The work area should be kept tidy and substances should be put in approved storage enclosures when not in use.
- Bottles, especially Winchester size, should be transported in special carriers.
- The correct handling equipment should be used to transport and manipulate cans and drums.
- The COSHH procedure form should be observed, and the forms kept up-to-date.
- The appropriate equipment must be available for prompt clean-up and decontamination after spills.
- Work which requires personal control should never be left unattended.
- Flames and compressed gas supplies should be shut off when not in use and on leaving the laboratory.

Hands should be washed before leaving the laboratory.

**UNDERGRADUATE STUDENTS SHOULD READ THIS HANDBOOK
IN ITS ENTIRETY.**

6 Chemicals and Laboratories

Chemicals and Laboratories represent significant hazards. For this reason a separate section dealing with their respective risks and required procedures is provided.

6.1 Chemicals

6.1.1 Procedures

Anyone who uses or might use chemicals should read the relevant material on the USO website <http://safety.ncl.ac.uk/chemicalsafety.aspx>

Under the Control of Substances Hazardous to Health (COSHH) Regulations (2002) a risk assessment must be made before hazardous chemicals may be used. This is detailed on the USO website <http://safety.ncl.ac.uk/chemicalsafety.aspx>

Users of high risk chemicals such as 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 the details are available from the School Safety Officer.

6.1.1.1 COSHH

COSHH form available on www.safety.ncl.ac.uk/coshriskassessment.aspx

Everyone who intends to work with chemicals must read and comply with the procedures described. The way the COSHH and Risk assessment forms are completed will vary from one project/experiment to another. In some cases a single form will suffice for a project (when it consists of a series of very similar experiments), whilst for others a several forms may need to be completed for experimental work. If the risks for a series of experiments are the same then it is acceptable to refer to previous assessments. The Supervisor(s) 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 sign it before the project/experiment commences. The date for review should be carefully set to ensure proper supervision and in any case must not be more than 5 years. For "one-off" experiments this should be indicated in the review date box. Experiments which are not 'one off' but are continually changing, the COSHH assessment must be regularly brought up to date. If experiments are not changing on a continuous basis then the COSHH form must be reviewed and their Supervisor sign and date the revised form.

Three copies should be produced;

- One to be placed next to or near the experiment/rig.
- One to be passed to the Laboratory Supervisor.
- One to be held by the Safety Committee Chair person.

The responsibility of this process is firstly with the postgraduate and then the Supervisor.

The form must be signed by the Supervisor(s) (or her/his nominated substitute) and all the above personnel should keep a copy. Safety inspections will include the monitoring of the working adherence to these COSHH regulations.

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

6.1.1.2 Risk assessment form

www.safety.ncl.ac.uk/riskassessment.aspx

Some examples of risks include:

High temperatures	Ionising radiation	Cryogenic liquids
Low temperatures	Machinery hazards	Flammable substances
High pressures	Falls from heights	Lasers
Vacuum/low pressures	Electricity	Lone working
Explosive substances	Manual handling/lifting	Oxidising substances
Radioactive substances	Falling objects	Noise
Sharp objects or edges	Repetitive movements	Vibration
Dusts	Collapsing structures	Working in darkness
Magnetic fields	Potential for flooding	
Other (please state):	Other (please state):	Other (please state):
Other (please state):	Other (please state):	Other (please state):

6.1.1.3 Hazard Data Sheets

These sheets come with the delivery of chemicals. A copy is to be kept by the researcher and a second copy will be made available to the laboratory Technician to be kept in a central location.

6.1.2 Potent Carcinogens

Anyone who uses or might use potent carcinogenic substances must refer to the university rules on the USO website <http://www.safety.ncl.ac.uk/carcinogenregistration.aspx>

Potent carcinogens (with risk numbers R45 or R49) may be purchased and used only with permission from the Potent Carcinogens Officer. If there is any doubt about a substance being classified as a potent carcinogen advice should be sought from the University's Potent Carcinogens Adviser. Note that potent carcinogens can only be used in fume cupboards approved by the University Safety Officer or University Potent Carcinogens Adviser.

Before potent carcinogens are used in the School the user must register with the University Safety Officer: see the Potent Carcinogen Officer for a form and further instructions. 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 the School are made.

All waste carcinogenic material must be identified as such and its collection and disposal arranged (via the Laboratory Technicians).

6.1.3 Repro-Toxicity

Some chemicals are toxic to the male and/or female reproductive system. Information and procedures relating to such substances is available on the USO web site at

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

6.1.4 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).

6.2 Laboratories

6.2.1 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) should be 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. Safety spectacles and laboratory coats must be worn when chemicals are being handled and when others in the vicinity are handling chemicals. 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. Persons who wear spectacles are advised to purchase prescription safety glasses for working in the laboratory. Alternatively goggles should be worn over their prescription spectacles.

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: details of the University laundry system can be obtained from the Workshop Supervisor.

6.2.2 Radiation Protection including Ultraviolet Lamps and Lasers

Equipment, e.g. ultraviolet lamps and Lasers, 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 Safety Officer.

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

6.2.3 Unattended Experiment Procedure

No experiment is to be left on overnight without completing an unattended experiment form, **Appendix 8**.

Forms are available from the Laboratory Technicians

The researcher concerned and the supervisor, or deputy, should be available for consultation during the duration of the experiment. It is advised that the unattended experiment procedure should be reviewed every 3 months and the form signed and dated by the Supervisor.

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 Safety Officer (or by agreement the Laboratory Technicians) signature.
- The name, address and telephone number of the supervisor.
- The name, address and contact details of the School Safety Officer.

Note: personal details such as address and home phone number may be attached as a separate sheet to the copy sent to Security and omitted from the lab copy.

Procedure

Overnight experiments must be in operation and ready for inspection by the supervisor. The Unattended experiment forms (appendix 8) are then completed. One copy (yellow), should be retained by the Safety Officer and another (green) sent to the University Police and 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.

6.2.4 Laboratory waste

A Chemical

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. 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 C317), and the date the container was brought into use. Waste which is highly flammable must be kept in fire resistant bins. Waste should be disposed of promptly (within 3 months, or less for some waste. If in doubt seek advice from the School Safety Officer). The Laboratory Supervisor/Technicians are responsible for organising the collection and disposal of chemical waste from laboratories.

Anything that is contaminated with chemicals (eg paper, cloths, gloves etc.) must be treated as hazardous chemical waste and placed in container with the correct labelling.

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.

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.) must be placed in the yellow plastic sacks provided. When full they must be tied and the Laboratory Technicians informed for disposal and replacement of sack.

Used scalpels, needles, etc. must be placed in 'sharps bins' for appropriate disposal.

Sharps should not be placed in any other bin.

D Glass

Thoroughly cleaned and unlabelled laboratory waste glass should be placed in appropriate glass bins for disposal..

E Metal Waste

Solvent drums and any other such containers should be rinsed thoroughly, have their labels removed and put aside for collection and disposal.

Other metal waste (not sharps) should be put aside for collection and disposal.

F Solvents

The following categories of solvent wastes should be collected separately:

- **Acetone** - Acetone that has been used for rinsing glassware after 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** - Dichloromethane, chloroform etc. including mixtures containing (halogenated) these solvents; these require efficient high-temperature incineration for safe disposal.
- **Toluene** - Including similar mixtures of this solvent.
- **Ethyl acetate** – stored separately.
- **Ethers** - Diethyl ether, tetrahydrofuran. Ethers should be disposed of as soon as possible. They may form dangerous peroxides on standing

H Office/domestic waste

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

6.2.5 Compressed gases

All gas cylinders are kept in a secure store with access restricted to authorised technical staff, all gas cylinders removed from this store are logged by the technical staff. Mandatory training is provided for those individuals who transport and use gas cylinders.

Safe use of gas cylinders

- When transporting gas cylinders always use the correct trolley and ensure the cylinder is secured with the trolley chains.
- Upon reaching the required location the cylinder should be properly secured to a wall or table with a clamp or chain and the trolley returned to the store.
- The gas cylinders are fitted with valve protection caps or guards that need to be removed before a regulator can be fitted.
- A member of the technical staff will fit the regulator to the gas cylinder checking both the condition of the regulator and the cylinder; he will then carry out a gas leakage test.

If at any time a gas leak is detected inform a member of the technical staff immediately

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..

A monitoring system is in place throughout the building to locate the presence, type of gas, and quantity of cylinders in all locations. Details are posted on a notice board outside every laboratory / workshop and the information is updated every two weeks.

6.2.5.1 *Insidious Gases (e.g. CO)*

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.

6.2.5.2 *Acetylene*

Acetylene is a highly dangerous, inflammable and unstable gas and should wherever possible be stored outside the building. Special regulations apply.

Please see <http://www.safety.ncl.ac.uk/uploads/05-08.pdf>

Acetylene must only be used with a special valve restricted to < 9 lbs/sq in (0.6 bar). Stainless steel, rather than pure copper tubing, must be used (risk of explosion!).

6.2.6 *Refrigerators*

Refrigerators for chemical storage must be modified by the electrician to make them spark-proof. All chemicals in refrigerators must be in closed containers and labelled

6.2.7 *Fume Cupboard Testing*

A programme of testing for all fume cupboards and other types of extraction units is in place: it is a requirement of the COSHH regulations that they are tested each 12 months. Fume cupboards performing to standard will bear a green sticker indicating the maximum sash height for use. If the face velocity is below standard (red sticker) the user(s) will be informed and if necessary the fume cupboard will be taken out of action and remedial action sought by the School Safety Officer(s). Only fume cupboards bearing a black sticker have been approved for use with potent carcinogens (consult with the University Potent Carcinogens Advisor)

6.2.8 *Biological Safety*

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

No research or experimentation can be undertaken until the Bio-Safety document has been read. Then permission by the School Biological Safety Officer must be given and the relevant documentation signed before any laboratory work is undergone. Copies of the Bio-Safety Booklet are held by the Biological Safety Officer and the Laboratory Technical Staff and are available on the School web site: <http://www.ncl.ac.uk/ceam/about/safety.htm>

7 Safety and Monitoring Procedures

7.1.1 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. Additional sessions will be provided for new postgraduates starting later in the year. Individual safety instruction is given for specific work by supervisors.

New postdoctoral research associates 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.

7.1.2 'Self-Inspections'

In accordance 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.

Inspection teams will carry out one inspection per year, plus occasional random inspections 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 issues have been addressed, a list has been provided to enable inspectors to readily check that these issues have received attention. Members of staff responsible for a particular room or laboratory should inspect their areas on a regular basis and use the check-list (Appendix 4, page 34) 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(s). 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 School Safety Officer(s).

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.

7.1.3 Out of hours working

The University Health and Safety 2002 policy document gives detailed instructions relating to 'Work Out-side Normal Hours' (section 23, page 16) and Supervision of Students (section 25, page 18) which must be adhered to.

1. For the purposes of this policy 'work outside normal hours' refers to working in the School outside the hours Monday - Friday 8.00 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 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(s).

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. The School has introduced a policy whereby a declaration of the arrangements for a "buddy" system must be made by the postgraduate student or PDRA and the supervisor must agree that these arrangements are satisfactory. This declaration must be renewed weekly. See Appendix 9
5. **No work involving laboratory hazards is allowed unless another "appropriately skilled" person is within call.**

7.1.4 Accidents

All accidents (including incidents not involving injury) and "near misses" must be reported. The reporting procedure is in two parts, (i) informing a responsible person to take control of the incident and (ii) completion of an official accident report.

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

- School Safety Officers
- Supervisor(s) or Research group leader
- Workshop Supervisor
- School First Aiders

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 online.

Follow the links on the USO website **www.safety.ncl.ac.uk**

The accident will be investigated by the School Safety Officers 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 University Potent Carcinogens Officer. Ill-health that is believed to be work-related (including stress) should be reported using online accident report form. Confidential matters may be taken up with the University Safety Officer directly.

7.1.5 Asbestos

If asbestos is found inform the School Safety Officer who will arrange disposal or seek advice from the University Safety Officer or from Estates if it is in the fabric of the building.

7.1.6 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.

7.1.7 Computers/Display Screen Equipment (DSE)

If you fulfil the following criteria then you are classed as a DSE User and should follow the best practice guidelines, undertake self assessment and online training:

- You normally use DSE for continuous or near-continuous spells of an hour or more at a time; and
- You use DSE in this way more or less daily; and
- You have to transfer information quickly to or from the DSE

If your daily average use is less than 1 hour per day then you are not classed as a DSE user and you do not need to take any action.

I classify as a DSE User what should I do ?

Please navigate to: <http://www.ncl.ac.uk/ceamitsupport/dse.html> for information and advice on the current DSE regulations, together with a simple online training package and self evaluation workstation checklist, which can be used by most people whilst at their computer.

I have DSE related safety issues to report who should I contact ?

Please navigate to: <http://www.ncl.ac.uk/ceamitsupport/> and submit a support request , a DSE Assessor will contact you as soon as possible.

7.1.8 Contractors

There are University guidelines for engaging contractors and these are summarised in the paragraph below:

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, hplc instruments, spectrometers etc.). These guidelines describe the responsibilities of staff engaging contractors and they must be adhered to. The technical staff responsible for the area must be consulted before contractors are engaged. Upon arrival in the School all outside workers must report to one of the following: a Senior Technician, or the member of staff in charge of the area where work is to be done. They should also report to the School Office (3rd Floor, Merz Court) and be provided with a visitor's pass, which must be worn visibly at all times. They must also fill a Visiting Workers Registration Form (Appendix 3, page 36).

7.1.9 Disabled Persons

Persons with physical disabilities (including temporary disabilities such as bone fractures) should make themselves known to the School Safety Officer who will discuss with them evacuation procedures in the event of an emergency. Those who cannot use the stairs unaided should ensure that they have a personal emergency evacuation plan (PEEP) and there is always someone within earshot to help them out of the building in case of emergency evacuation. Several "evac" chairs are available throughout the Main stairwells) for use in emergencies.

7.1.10 Electrical Safety

All electrical apparatus is maintained through the electrical workshop technician.

Electrical apparatus supply cables and plugs should be carefully examined before each use to ensure that no damage has occurred that could expose live wires or cabling. Any plug on the supply cable should be securely attached to the cable. This applies to **all** electrical equipment being used.

If any damage is found or there are any concerns about the state or safety of a piece of electrical apparatus, cabling or plug, the apparatus must not be used and this must be reported to the electrical workshop technician or any other member of the technical staff immediately.

All electrical repairs are to be carried out by the electrical workshop technician.

A summary can be found below:

- **Under no circumstances must equipment or apparatus be used or operated if any damage is evident.**
- **No wiring of any electrical equipment or apparatus must be carried out by anyone other than the electrical workshop technician.**
- All EARTH connections (SAFETY ELECTRICAL CONNECTIONS) on any appliance, apparatus or equipment must be connected at all times. **Under no circumstances should they ever be removed.** If in any doubt contact the electrical workshop technician for advice.
- Any equipment with out of date PAT test labels must not be used and should be reported to Mr Paul Sterling, Mr Stewart Latimer or the electrical workshop technician. (see also PAT on page 16)
- Any equipment with damaged or broken plugs or connectors or with damaged cabling, **must not be used** and must be reported to the electrical workshop technician or any other member of the technical staff immediately.
- If any spillages of liquid occur on or around any electrical apparatus the electrical supply should be turned off and the spillage must then be reported to electrical workshop technician or any other member of the technical staff immediately.

7.1.11 Eye Washes

Eye wash facilities must be checked on a regular basis to ensure no contamination. (mains facilities by flushing for 2 minutes daily, self contained bottles by checking use by dates)

7.1.12 First Aid Boxes

First aid boxes are provided and contents must be checked monthly and replenished accordingly. A list of materials permitted for inclusion in First Aid boxes can be obtained from the First Aiders. Details of First Aid training can be obtained from the School Safety Officer.

7.1.13 Food

Food and beverages brought into the School must not be kept or consumed in laboratories. Cups and other utensils must not be brought into laboratories.

7.1.14 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 P Sterling or Mr S Latimer.

7.1.15 Identification Badges

There is no University policy about staff having to wearing their identification badges, but the School encourages the wearing of badges as a security measure.

7.1.16 Leaving Form

Refer to the 'Departing Staff, Students and Visitors (Appendix 6).

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 **Error! Reference source not found.**). 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.

7.1.17 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 the School's Manual Handling Coordinator (Mr S. Latimer). The following items of manual handling equipment are available to assist; potential users must obtain permission and instruction from the manual handling coordinator.

7.1.18 New projects

The Head of School and the School Safety Officer must be consulted at an early stage as to the location and hazards involved.

7.1.19 Portable Appliance Test (PAT)

Inspections of portable electrical appliances in the School are carried out on an annual basis or other frequency, 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 P Sterling or Mr S Latimer when it arrives. Permit to work

All staff, students and visitors must have a **Permit to Work** issued by the Head of School before starting work. This is an agreement to work safely.

The form for new staff and students is entitled *Permit to Work and Key Deposit* (Appendix 5); and for existing workers '*Permit to Work*'. Signatures from the Supervisor(s) and the Head of School must be obtained to authenticate the permit.

Before leaving a similar declaration must be made that all work areas, chemicals, samples, etc. have been left in a safe condition or disposed of. This must be clarified by a relevant member of the technical staff, **Error! Reference source not found.** Departing Staff, Students and Visitors (Appendix 6). The cost of clearing up or disposing of any materials/equipment left by a person leaving the School may be charged to the student or supervisor.

7.1.20 Rotating Machinery

Use the guards provided, observe restrictions on use and take note of the warning notices displayed. Each piece of machinery must be regularly maintained and inspected by a workshop technician before an experimental program commences.

7.1.21 Safety Signs

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

7.1.22 Safety Training

All members of the School (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 the School 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.

7.1.23 Security

Only the Main Entrance doors (by the Porter's Lodge and the main courtyard entrance to Merz Court) are open during working hours. All other outer doors are locked. At weekends, during holidays and after 5.00 pm on weekdays the Main Entrance door will also be locked. Keys to the Merz Court Building must be returned on termination of **Permit to Work**.

7.1.24 Smoking

The university has a no smoking policy on campus.

7.1.25 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 the School.

7.1.26 Supervision of Students

See also the University's Health and Safety Policy, Section 25, page 18 (this also obtainable on the University Safety Web site).

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(s) 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.

7.1.27 Teaching and Research

Most laboratories are either research or teaching labs. Whilst it is recognised that postgraduate students may wish to use some of the facilities in the teaching labs, when undergraduate teaching is taking place the needs of the undergraduate students will take priority and permission therefore must be obtained from the Laboratory Technicians in charge of that laboratory.

7.1.28 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.

7.1.29 Visitors

Casual visitors must not be entertained in laboratories. If it is necessary for a visitor to enter a laboratory they must go to the main office for a visitors pass if permission has been granted. They should also be provided with safety spectacles and other personal protective equipment as necessary.

7.1.30 Water supply

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 to an experiment or the possibility of a fluctuation in water pressure over a 24 hour period.

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.

7.1.31 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.

7.1.32 Workshop

- You must ensure that you are wearing a lab coat and safety spectacles when you enter any workshop area.
- Anyone entering the workshops or laboratories must report to a member of the technical staff,
- Wear suitable footwear do not enter workshop areas wearing open sandals
- Do not try to speak to any technical staff while they are using any machinery, stand by the door and wait till the technician contacts you
- Workshops can be dangerous places, sharp and hot cuttings on the floors, welding and grinding sparks flying in the air, machine tables moving very quickly, stand by the entrance door do not wander about.
- Under no circumstances are tools or equipment to be taken from the workshops or laboratories without the consent of a member of the technical staff.
- Students are not allowed to use workshop hand tools unless under technical supervision.

Appendix 1 CEAM Safety Personnel

Head of School of Chemical Engineering & Advanced Materials

Professor S J Bull
Room C307
Ext: 7342
E-mail address: s.j.bull@ncl.ac.uk

Safety Officer

Professor Allen Wright
Room C304
Ext: 7303
E-mail address: a.r.wright@ncl.ac.uk

Safety Officer: (Herschel Building)

Dr E. A. Charles
Room: 621
Ext: 7900
E-mail address: E.A.Charles@ncl.ac.uk

Biological Safety Officer

Dr Jarka Glassey
Room: C314
Ext: 7275
E-mail address: Jarka.Glassey@ncl.ac.uk

Safety Committee

Prof A Wright
Mr Stewart Latimer (stewart.latimer@ncl.ac.uk)
Mr Rob Dixon (r.j.dixon@ncl.ac.uk)
Dr Jarka Glassey

Computer Officer (VDU)

Mr Vince Scott
Room:
Ext: 7818
E-mail address: Vincent.Scott@ncl.ac.uk

First Aiders

Mr R Dixon
Ext: 5202
Dr Mark Willis
Ext: 7402

Appendix 2 Fire Warden coverage

A fire drill will be held each academic year; usually during the Michaelmas term. In the event of a drill or the real thing, please:

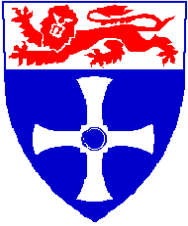
1. Carry out the duty of any member of your group who is absent.
2. Ensure that your allocated area is clear of personnel.
3. Check that all doors and windows are shut.
4. Note any alarm failure or ways in which the drill may be carried out more effectively.
5. Report to the Fire Marshall in the foyer of the CEAM main entrance.

GROUP	MEMBER	AREA
A	Mr S Daley	Electronics workshop, Computing room (C125), Staff Office and rooms, C201, C202, C203, Cleaners room, Toilet, CPACT Office, Postgraduate Office and 1M Toilet.
B	Mr J Banks	Process Intensification Lab (C113) Office, Test Bays, 6, 7, 8, 9, 16, Lab (C115), Analytical Room and (C119).
	Mr B Grover	Workshop, Workshop store, Ground Floor toilet, Cluster Rooms, Solvent store, Acid store and Outside lab, Outside store and Compressor room.
	Mr I Strong	Pilot Plant (ground floor level), Technicians Tea room, Lower switch room, Test bays 1 and 2, Lab (C15), R A Office (C13), Store (13A), Lab (C18), R A Office (18A), Lab (C19).
	Mr S Latimer	Upper level of Pilot Plant and Gallery, Test Bays 10, 11, 12, 13, 14, 15, Technical Office (C21), Basement and Store.
C	Mr P Sterling	Chemical Engineering Teaching Lab, Electrochemistry Lab, Chemical Store, Cleaners room, Fuel Lab and Rooms C314, 315, C316.
	Mr R Dixon	CPACC Office, Bio-processing Lab, RA Office, Electrochemistry Surface Lab, Electrochemistry Materials Lab, Computing rooms (309 and 311), Rear courtyard.
D	Miss J Trewick	All rooms on the Queen Victoria Road side of the office area, C402, C403 and CPACC room. All rooms on the courtyard side of the Office area including the toilets.
E		
F		
G		

August 2008

Appendix 3 Visiting Workers Registration Form

Staff must complete section 1 when they have agreed to accommodate anybody to work in the laboratories. The Supervisor must also ensure that Section 2 is completed by the visiting worker.



University of Newcastle

SCHOOL OF CHEMICAL ENGINEERING & ADVANCED MATERIALS

VISITING WORKERS REGISTRATION FORM

(Note this form is for visitors / post grads who are not members of CEAM)

SECTION 1

TO BE COMPLETED AND SIGNED BY THE MEMBER OF STAFF RESPONSIBLE FOR THE VISITING WORKER AND TO BE APPROVED AND SIGNED BY THE HEAD OF SCHOOL.

RESPONSIBLE MEMBER OF STAFF

NAME OF VISITING WORKER

START DATE

END DATE

Postdoc / JRA / PhD / MSc / BMedSci / Visiting Scientist / Work Experience Placement / Other (specify) (delete as appropriate)

PROPOSED WORK

SPECIFIC TRAINING NEEDS

(e.g. Basic Microbiology, Radioisotopes, English etc.)*

** NB If work involving radioisotopes, genetic manipulation procedures not covered by the existing assessments or category 3 organisms is to be carried out approval must be sought from the appropriate School officer/committee.*

SIGNED

DATE

(Supervisor)

SIGNED

DATE

(Head of School)

SECTION 2

TO BE FILLED IN AT THE EARLIEST OPPORTUNITY BY THE VISITING WORKER IN CONSULTATION WITH THE RESPONSIBLE MEMBER OF STAFF.

Local address

Telephone

Mobile

Lab and office where you will work

Internal telephone

Email address

Special circumstances (if any)

Specific responsibility

Entry card required for out of hours work?

THIS SECTION MUST BE COMPLETED BEFORE THE NEW WORKER UNDERTAKES ANY PRACTICAL WORK IN THE RESEARCH LABORATORIES.

I confirm that I have received copies of the University Safety Policy including the "Health & Safety Requirements: Visiting Workers" and the Departmental Safety Policy, and undertake to work in accordance with them. I also undertake not to carry out work affected by the University procedures set out below until I have familiarised myself with those procedures so that I may observe them.

I can confirm that the School safety arrangements have been explained to me by appropriate School staff, who have shown me the notice identifying key safety personnel in the School and the lab copies of safety documentation. I confirm that I shall review COSHH risk assessments appropriate to my work and add my name to the listed personnel.

SIGNED

DATE

COPIES TO BE RETAINED BY: SUPERVISOR, WORKER and a copy to be held in the School General Office, 3rd floor.

Appendix 4 Laboratory Self Inspection Check List



University of Newcastle

SCHOOL OF CHEMICAL ENGINEERING & ADVANCED MATERIALS

LABORATORY SELF-INSPECTION CHECK-LIST

Building:

School:

Floor:

Room:

General

General Risk Assessment available and up to date?

✓ or ✗

Comments and proposals

Emergency procedures

Have worst reasonably foreseeable contingencies been identified?

✓ or ✗

Comments and proposals

Are plans in existence for such contingencies?

✓ or ✗

Comments and proposals

Safety spectacles/eye protection

Worn by workers in the lab?

✓ or ✗

Comments and proposals

Available for visitors?

✓ or ✗

Comments and proposals

Housekeeping

Cleanliness

✓ or ✗

Comments and proposals

Storage

✓ or ✗

Comments and proposals

Trip hazards?

✓ or ✗

Comments and proposals

Access routes clear?

✓ or *

Comments and proposals

Electrical

PAT testing up to date?

✓ or *

Comments and proposals

Fume control

Fume cupboard tests up to date?

✓ or *

Comments and proposals

Local exhaust ventilation in place and tested?

✓ or *

Comments and proposals

Flammable solvents

Stored in sealed containers inside fire-resistant enclosures?

✓ or *

Comments and proposals

Storage in lab kept to a minimum?

✓ or ✖

Comments and proposals

Accidental sources of ignition eliminated?

✓ or ✖

Comments and proposals

Chemicals

COSHH risk assessment procedures in operation?

✓ or ✖

Comments and proposals

Risk assessments available for inspection?

✓ or ✖

Comments and proposals

Is "Good Chemical Practice" being observed?

✓ or ✖

Comments and proposals

Is all the necessary personal protective equipment being used?

✓ or ✗

Comments and proposals

Are proper procedures in place for waste disposal?

✓ or ✗

Comments and proposals

Are chemicals properly stored?

(e.g. no incompatible substances in close proximity, corrosives in sealed containers in fire-resistant enclosure)

✓ or ✗

Comments and proposals

Are chemicals properly labelled?

✓ or ✗

Comments and proposals

Have all redundant chemicals been disposed of?

✓ or ✗

Comments and proposals

Are potent carcinogens in use?

✓ or ✖

Comments and proposals

If so, have they been notified to the University Safety Officer?

✓ or ✖

Comments and proposals

Are Local Rules being observed?

✓ or ✖

Comments and proposals

General Comments/Points for action/Training needs identified

SIGNED

(Supervisor)

DATE

SIGNED

(Safety officer)

DATE

Appendix 5 Permit to Work and Key Deposit

SCHOOL OF CHEMICAL ENGINEERING & ADVANCED MATERIALS

PERMIT TO WORK AND KEY DEPOSIT

NAME (please print) _____

Academic Staff/Support Staff/Research Associate/Postgraduate Student/Visiting Staff

I have read the School Safety Handbook and undertake to abide by all safety rules. I also accept that if my experiment/experimental work is deemed unsafe by the appropriate safety personnel, it will be immediately suspended until further investigation and remedial action has been taken. At the end of my time in the School I undertake to return any Merz Court building keys in my possession and leave my workplace in a clean and tidy condition. Chemical samples will be labelled at all times and unwanted chemicals will be disposed of in accord with School procedures.

I confirm I have received a requisite set of Merz Court building keys for my personal use and paid a £20.00 deposit to the Administrator.

SIGNED _____

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

SIGNED (Supervisor) _____

This form is retained by the Administrator based in the main office suite of Merz Court.

For office use only:

<i>Keys issued</i>		<i>Deposit Paid</i>	
<i>Date issued</i>		<i>Date returned</i>	

Appendix 6 Departing Staff, Students and Visitors

SCHOOL OF CHEMICAL ENGINEERING & ADVANCED MATERIALS

DEPARTING STAFF/STUDENTS/VISITORS

NAME (please print) _____

I can confirm that 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.

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 a dereliction of duty and may lead to the supervisor being charged for clean up, etc.

SIGNED (Supervisor) _____

DATE _____

I can confirm I have returned all Merz Court building keys and received my deposit.

SIGNED _____

DATE _____

This form is retained by the Administrator based in the main office suite of Merz Court.

Appendix 7 Out of hours working declaration

Postgraduate student / postdoctoral researcher declaration

Laboratory:

Dates and times of intended work*:

Please indicate below the provisions you have made for an appropriately skilled person to be within call in the event of an emergency.

Please sign and date:

Supervisor's declaration

I have reviewed the above provisions and regard them as satisfactory for safe working in the named laboratory.

Please sign and date:

A copy of this declaration should also be given to the School Safety Officer.

***NOTE**

- **Working outside normal hours in laboratories without an additional appropriately skilled person nearby is a potentially hazardous practice and must not be undertaken.**
- **For this reason this declaration must be renewed weekly.**

APPENDIX 8 UNATTENDED EXPERIMENT FORM

WARNING NOTICE	
<i>COPY 1 TO OUTSIDE DOOR OF ROOM</i>	
UNATTENDED EXPERIMENT	
<i>BUILDING</i>	<i>SCHOOL</i>
<i>FLOOR</i>	<i>ROOM</i>
<i>LOCATION IN ROOM</i>	
<i>COMMENCEMENT DATE</i>	
<i>APPROX COMPLETION DATE</i>	
<i>SPECIAL INSTRUCTIONS:- ACTION REQUIRED CONCERNING</i>	
<i>POWER FAILURE</i>	
<i>FIRE</i>	
<i>FLOODING</i>	
<u>THIS FORM IS AVAILABLE FROM THE LABORATORY TECHNICAL STAFF</u>	
<i>OVERHEATING</i>	
<i>LIGHTING FAILURE</i>	
<i>SPILLAGE AND OR FLOODING</i>	
<i>VENTILATION FAILURE</i>	
<i>OTHER</i>	
<i>EMERGENCY CONTACTS</i>	
<i>(a) RESEARCHER RESPONSIBLE</i>	<i>(b) SUPERVISOR/SAFETY OFFICER</i>
<i>NAME</i>	<i>NAME</i>
<i>CONTACT DETAILS: TELEPHONE</i>	<i>CONTACT DETAILS: TELEPHONE</i>
<i>COPY 1 TO OUTSIDE DOOR OF ROOM CONTAINING EXPERIMENT</i>	
<i>COPY 2 TO HEAD OF SECURITY</i>	
<i>COPY 3 TO SCHOOL SAFETY OFFICER</i>	

