Safety Statement

for

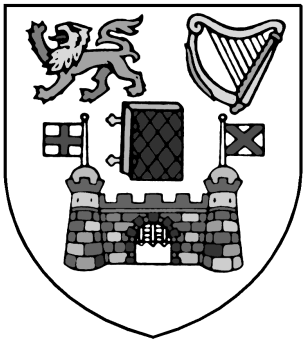
The Department of Mechanical & Manufacturing Engineering

& the

Centre for Bioengineering T.C.D

Parsons Building

Trinity College Dublin.



Written: January 2004
Revised: 31st May; 4th Sept 2006.
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Revised: 15th August 2011 Biqiong Chen
Revised: 2nd February 2012 Biqiong Chen

This document must be read in full and, if applicable, the declaration in Appendix VIII must be completed and returned to the College Physician.

Authors: Garrett Lyons & Adriele Prina-Mello - Jan 04

IN THE EVENT OF AN EMERGENCY RING 1999

The internal telephone number 1999 provides immediate access to professional assistance on a 24-hour basis. Be prepared to state:

1. Type of assistance required (ambulance, fire brigade, police etc.)
2. Type of emergency (fire, injury, etc)
3. Name, extension number and location.

If possible and safe to do so, stay close to the telephone, in order to give further information should it be required by the emergency services.

This number should only be used in a genuine emergency.

Departmental Staff, phone numbers etc., related to safety

Title	Present Holder	email	Tel #
Head of School	Prof. M. O'Mahony	Margaret.omahony@tcd.ie	2084
Head of Department	Prof. D. Taylor	dtaylor@tcd.ie	1703
Dept Safety Officer	Dr. B. Chen	chenb@tcd.ie	1729
Bio Safety Officer	Dr. B. Murphy	bruce.murphy@tcd.ie	8503
Chief Technician	Mr. M. Reilly	mireilly@tcd.ie	1557
Chemicals & Bio Hazards	Mr. P. O'Reilly	poreilly@tcd.ie	1854
Mechanical Safety	Mr. M. Reilly	mireilly@tcd.ie	1557
Thermo Lab Safety	Mr. G. Byrne	gerbyrne@tcd.ie	3523
First Aid	Dr. C. Simms Mr. J.J. Ryan Dr. K. O'Kelly Mr. Mathew Lyons	csimms@tcd.ie jryan2@tcd.ie okellyk@tcd.ie lyonsm2@tcd.ie	3768 (CS) 1464 (JJR) 1367 (KOK) 2978 (ML)
Fire Wardens	Mr. P. O'Reilly Mr. S. Doonan Mr. G. Nicolson Mr. G. Byrne Dr. K O'Kelly	sdoonan@tcd.ie gabriel.nicholson@tcd.ie *Other emails as above*	1463 (SD, GN)

College Special Hazards Officers

The following members of staff have been appointed by the Board as specialist advisors in the fields outlined below. They advise the College Safety Officer, Local, Faculty and College Safety Committees & the College Community in general on matters relating to their respective fields. If you have a query in relation to safety in the use of lasers, radioactive materials, biologically hazardous materials, fire safety or hazardous chemicals, the relevant specialist in College can be contacted at the Tel #'s or addresses shown.

- **Hazardous Chemicals** Dr. Michael Bridge, Chemistry Department, Chemistry Building, College *tel*:6081264 *e-mail:* mbridge@tcd.ie
- **Bio-Hazards** Dr. Fred Falkiner, Microbiology Department, Moyne Institute, College. Tel.: 8962137
- **Bio-Resources.** Mr. Peter Nowlan, Bio-Resources Unit, Biochemistry Building, College *tel:* 6081008 *e-mail*: peter.nowlan@tcd.ie
- **Laser Safety** Dr. Vincent Weldon, Physics Dept., College. Tel: 8962168
- **Radiological Protection** Ms. Elaine Lee, Director of Buildings' Office, West Chapel, College *tel*:6082887 *e-mail*:elaine.lee@tcd.ie

Contents

General statement of Departmental safety policy

Parsons Building houses both the Department of Mechanical & Manufacturing Engineering and the Bioengineering Centre TCD. For health & safety purposes we may make 2 distinctions, 1) General Safety in offices, passageways, lecture theatres, 'non-bio' teaching & research labs and in workshops, and 2) Safety for bio-hazard areas (Bioengineering Centre). Despite the foregoing divisions, overall responsibility for health & safety rests with the Department. It is the Department's policy to ensure, in so far as is possible, the health, safety and welfare of all its staff and students in accordance with the College Safety Policy, the Safety, Health and Welfare at Work Act of 1989 and relevant, later, subsidiary legislation and statutory instruments. All reasonable steps will be taken to ensure that no person's – be it staff, students or others – health, safety and welfare is put at risk by, or as a result of the activities of the Department.

In so far as reasonably possible, adequate resources in relation to health, safety and welfare matters will be made available. All affected will receive the necessary, and up to date, information, instruction and training and adequate levels of supervision for them to undertake activities in a safe manner. Both proactive and reactive approaches towards health, safety and welfare will be taken.

By achieving all of the above the Department will ensure that it meets its objectives for health, safety and welfare of:

- establishing a safe environment for all;
- establishing and maintaining safe working procedures for staff and students;
- encouraging health and safety as an integral part of work by all staff and students;
- developing and maintaining a safety consciousness and a safety culture in all within the Department & Bioengineering Centre
- conforming to the requirements laid down in the Safety, Health and Welfare at Work Act. 1989, any further provisions made under the Act, other applicable legislation and the College Safety Statement, College Policies and Codes of Practice documents.

Signed  (Head of Department)

Date 15/8/11

Safety Responsibilities and Duties

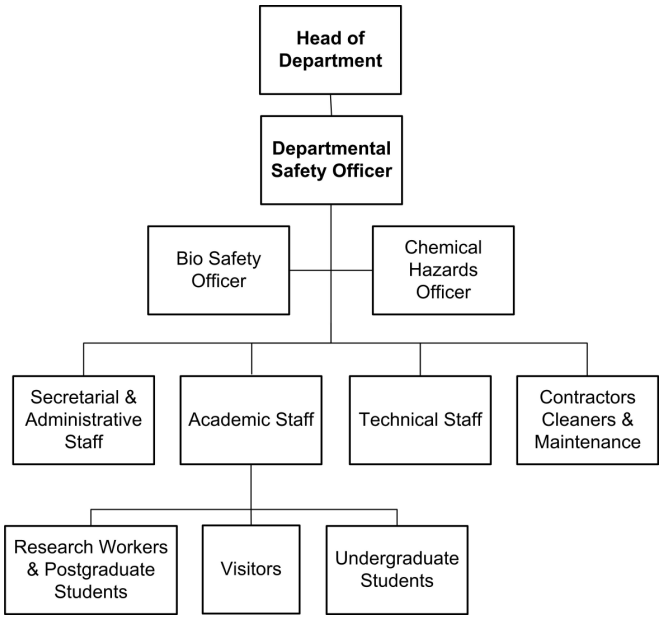
All personnel (staff, students and visitors) have a personal responsibility to ensure the health and safety of themselves and of others who may be affected by their activities within the Department.

Executive Responsibilities

The Head of the Department is responsible for safety in the Department. He will appoint another member of the staff of the Department to act in his absence, and a record of the name of this acting Head of Department will be retained in the office of the Department.

The Departmental Safety Officer (DSO) has executive responsibility for safety and reports to the Head of Department. She is supported by the Chief Technician. In the event that the Chief Technician is absent from the Department the DSO will perform her safety duties.

The organisation chart for health and safety within the Department is given below.



Monitoring Safety Performance

All personnel within the Department have a responsibility to contribute to the continuous monitoring of safety performance within the Department. On a day-to-day basis this can be achieved by forwarding comments, queries and complaints on safety matters to the Departmental Safety Officer or Chief Technician.
In pursuance of the safety policy of the Department, the Departmental Safety Officer will carry out regular safety inspections (at least once per calendar year) and maintain appropriate written records. The results of these inspections will be discussed at Departmental staff meetings.

Any deficiencies in equipment or procedures must be rectified promptly.
Where equipment is deemed to be unsafe **it must not be used** until corrective action is taken.

The Departmental Safety Officer will maintain a detailed record of all accidents, injuries, property damage and near misses. These reports will be discussed at the regular meeting of the Engineering & Sys Sciences Faculty Safety Committee with a view to establishing why and where the safety performance was inadequate.

The Departmental Safety Officer will conduct periodical Safety Audits of the Department in collaboration with the Chief Technician and the College Safety Officer, and reports on these audits will be given to the Head of Department.

Safety training

The Department holds an annual Safety day near the beginning of each Academic year. All new staff and postgraduate students are required to attend. Fire safety training is also mandatory for demonstrators and technicians working in undergraduate teaching labs. Additional training may also be mandatory for personnel working in special hazards areas.

The Smoking Ban:

The Minister for Health and Children has announced that a ban on smoking comes into place on March 29th 2004. The ban is as a result of the implementation of the Tobacco Smoking Regulations, 2003 (various) made under the Public Health (Tobacco) Act, 2002.

From 29th March 2004 smoking is prohibited by law in all buildings in College

The prohibition does not extend to external places of work but the ban extends to Front Arch and, perhaps more significantly to the covered area between the Nassau Street gate and Fellows Square. The legislation has been approved by the Board of TCD (see appendix I).

Section I – General Safety rules in the Parsons Building & its extensions

The following are the general safety rules which apply to all personnel within the building, including staff, students and visitors.

Note: All accidents must be reported to either the DSO or the Chief Technician who will complete the statutory 'Accident Form', a copy of this form is then sent to the College Safety Officer who registers all accidents in College

Additional more specific safety rules apply to the personnel working in the following areas:

- Undergraduate Teaching Laboratories,
- Workshops.
- Research Laboratories.
- The Bioengineering Centre's laboratories

These are discussed in sections II, III and IV below.

Access to Parsons Building.

The normal opening hours for the Department are 0830- 1730hours, Monday to Friday.
Although free access is available to most Department buildings during normal working hours access outside normal working hours is limited strictly to authorized staff, postgraduate students, authorised students, visitors and contractors. Contractors & maintenance personnel must be made aware of the hazards in the areas to which they are admitted.

Visitors.

- Visitors to the Department or Bioengineering Centre must immediately contact their staff host (or the Departmental office) on entering the Building. Staff, who have visitors, are responsible for ensuring that their visitors are aware of all safety rules, are fully aware of local fire evacuation procedures and have been informed of any special risks associated with the area being visited.
- Visitors who are not technically qualified must not be left unattended in any laboratory.

- Casual visitors to the Department should go to the Enquiries Office.
- Transition year school students who may be temporarily attached to the Department will be classified as visitors.

Disabled Persons

There are no fire lifts installed in the Mechanical Engineering Dept. Available Lifts should NOT be used in the event of a Fire. Before entering the building Physically Disabled persons should be fully informed of the following procedures.

Progressive Horizontal Evacuation or Lateral Evacuation will be practiced. Physically Disabled occupants will be moved horizontally within the building away from the hazard. A 'Buddy System' should apply whereby the staff member concerned will be responsible for the disabled Visitor/Student. Disabled Visitor(s)/Student(s) may be left behind for the arrival of the fire brigade to execute complete evacuation**.**
The staff member concerned must inform the fire service of the person's location

All visitors, contractors & maintenance personnel must comply with the Safety regulations.

EMERGENCY 1999

The internal telephone number 1999 provides immediate access to professional help on a 24-hour basis. This number should only be used in an emergency.

Fire safety

The legislation governing fire safety in the Department is the Fire Services Act of 1981 and The Building Control Regulations of 1991.

When the fire alarm sounds all personnel must immediately leave the building using the nearest available exit route (or the exit route specified by local fire wardens). In the event of an emergency evacuation all personnel must obey, promptly, all instructions given by the fire warden/Safety officer.

- Emergency exit routes are clearly indicated on all corridors.
- Escape routes are lit by emergency lighting in the event of failure of the electricity supply.
- Lifts must not be used during emergency evacuation.
- After evacuation go directly to the designated assembly point (the 'Flat Iron'*). Do not congregate at the building entrance, or at the foot of the steps.

Fire drills

Fire drills are held twice during each calendar year and are attended by the Chief Steward, the College Safety Officer, and by members of the College security staff. Drills are held without prior warning and during working hours when the building occupancy is likely to be high. Security staffs check each building for defaulters before the all clear is given. A written record of each fire drill is maintained, indicating the date, the approximate number of persons evacuated from the building, and the time taken for complete evacuation.

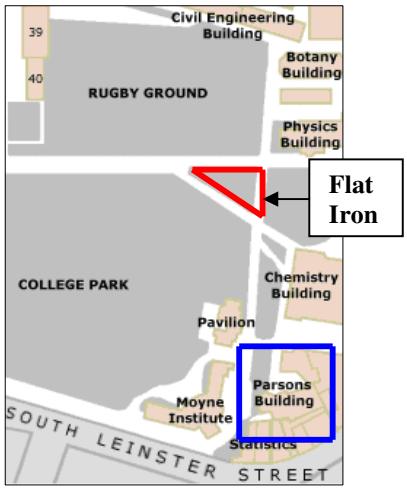
Fire wardens

There are six Fire wardens for the Mechanical Engineering Department as detailed on page one of this safety statement.

Fire Alarm and Evacuation Procedures

The Building is provided with an automatic fire alarm system, which is regularly tested by the College Buildings Office. The fire alarm can be manually triggered from any of the several break-glass alarm boxes, which are placed in strategic areas around the Building. In the event of a fire the fire alarm system

should be activated immediately and the building evacuated. Persons in charge of lecture theatres and teaching labs should assist with the evacuation of their areas.



* **ASSEMBLY POINT** The Flat Iron is that triangular section of grass which lies between the eastern ends of College park & the rugby pitch *see map shown*.

Fire fighting equipment

College appointed professional fire control companies carry out regular inspection, renewal and servicing of fire extinguishers under the direction of the College Buildings Office.

Any person who has used one of the Building's fire extinguishers, even for a very short time, must report the fact immediately to the Departmental Safety Officer or Chief Technician, so that it can be fully recharged or replaced. Additionally, an Accident/Incident Report Form must be completed in respect of each such use of any fire extinguisher.

Frivolous & unauthorised use of any fire-fighting equipment is a criminal offence and will be dealt with most severely.

Action in the event of fire

If any member of the Department or the Bioengineering Centre discovers a fire the following actions must be taken. The person discovering the fire will:

- Provided that to do so does not compromise their personal safety, briefly attempt to extinguish the fire using the equipment provided.
- Activate the fire alarm,
- Leave the building and call for further help.

Liaison with the Fire Brigade

The Department & Centre recognises the special hazards, which its use of compressed gases presents to fire service personnel. The Department will seek to reduce these as follows:

- It will pursue, as far as is practicable, a policy of piping in gases rather than keeping gas cylinders on the premises.
- It will keep records of the main hazards relating to cylinders of compressed gases in each area of the building. These will be kept at the Chief Technician's office and sent to the Chief Steward's office.

Fire Doors

Fire doors must not be left open under any circumstances.

First Aid

It is the policy of the Department that first aid will not take the place of professional treatment. In the case of minor injuries such as cuts or burns, assistance may be sought from members of the Department who possess a qualification in First Aid. Those currently qualified in First-aid are shown in the Table on page *i*.

For more serious injuries the person injured will be accompanied to the College Health Centre or an ambulance will be summoned.

First aid boxes

First aid boxes will be kept in all laboratories and workshops. Names and telephone numbers of the nearest personnel with First Aid expertise are posted on all First Aid boxes, as is the College emergency number and that of the College Health Centre.

First aid boxes will be maintained by the Chief technician who will at regular intervals check that the contents of each box are in order, and replace missing or outdated items.

The Department will carry a stock of commonly used first aid materials which will be employed to replace items necessarily used. These will be available from the Chief Technician.

First aid training

It is the policy of the Department to encourage volunteers from the permanent staff and postgraduate students to attend First Aid courses.

Hazardous Areas.

Areas within the Building, which contain potentially hazardous equipment and/or substances, must be clearly marked with warning signs. Accessing to these areas is prohibited for unauthorised personnel.

Notices describing the hazards present in a laboratory are displayed on the exterior of its door. Before entering a laboratory it is the duty of each person to acquaint themselves of the hazard/s present and to don the appropriate safety clothing or devices necessary for personal protection.

Working hours.

There are no defined, normal, working hours for the Department or the Bioengineering Centre. However, all access doors will be locked outside 08.30-18.00hrs, Monday to Friday and at all times Saturdays & Sundays.

The only circumstances in which those other than staff members, postdoctoral workers, graduate & undergraduate students and accompanied visitors will be permitted to be in the Department outside the above hours are as follows:

i. Persons attending evening lectures.
ii. Persons attending society meetings.
iii. Security Staff.
iv. Cleaning Staff.
v. Maintenance Staff.
vi. Persons with special permission of the Head of Department.

Persons in categories (i), (ii), (iii) and (iv) above need not sign the night book. Persons in charge of society or research group meetings must sign the late book.

Working in Isolation.

Working on experimental systems (or machinery) outside normal working hours is not permitted without prior authorization of the project supervisor (or person-in-charge) after he/she has conducted a full assessment of risk and devised a safe system of work.

No staff member, postdoctoral worker or postgraduate student will be permitted to carry out experimental or technical work of any kind in the Department at any time outside normal working hours unless there is another person close by, who is aware of their presence so that they can summon assistance in the event of an accident.

Isolated individuals must never carry out potentially hazardous work or activities.

Clearways.
As far as is practically possible all entrances/exits, corridors, stairways and doorways must be kept clear of obstructions. All temporary obstructions (e.g. during movement of large equipment or maintenance work) should be notified to the Departmental Safety Officer who will designate alternative temporary emergency exit routes.

Electrical Switch Rooms/Plant Rooms.
These rooms must be kept clear of obstructions at all times. Access to these areas must be kept clear.

Reporting of Hazards.
All personnel using Departmental buildings have an individual responsibility to report, directly to the Departmental Safety Officer or Chief Technician, all potential hazards and/or hazardous occurrences, which they may observe. Undergraduate students who observe hazard/s may report to their class representatives who in turn will report to the DSO.

Reporting Accidents and Dangerous Occurrences.
All accidents and dangerous occurrences, even those of a minor nature, must be immediately recorded in the Departmental Accident Record Book held by the Chief Technician. In the case of accidents leading to personal injury and/or potentially dangerous occurrences the Departmental Safety Officer will provide an official College Accident/Incident Form (Appendix II), which must be completed as soon as possible after the incident.

Details of witnesses to the incident, if any, will also be noted and forwarded, along with the report form, to the College Safety Officer as soon as possible after the incident. Copies of the form will be retained in the Department.

Section II - Safety rules for Teaching Labs & Lecture Theatres
The general safety rules and procedures, which apply to all personnel within Parsons building, including staff, students and visitors, are detailed in the GENERAL SAFETY RULES section of this document. The following rules apply specifically to all personnel (including staff, demonstrators, and undergraduate students) who are authorised to enter and work in the teaching laboratories and lecture theatres of the Department.

Training
As indicated previously, all teaching assistants, demonstrators and lab technicians must have completed a Fire safety course. These courses are organized by College and details may be obtained from the Departmental Safety Officer.

General laboratory rules
- Incoming students must read and abide by the Health and Safety Guidance Manual issued by the Department of Mechanical & Manufacturing Engineering, TCD. A statement to this effect will be inserted into all MME student information booklets.

- Guidance for the use of hazardous equipment, materials and procedures (such as lasers, chemicals or electrical equipment for example) may be found in section 4 of this document (Safety rules for offices and research labs.)

- Coats, bags etc must not be left on lab benches or anywhere they could cause an obstruction.
- Students are not allowed to work unsupervised without the explicit permission of the lab supervisor.
- Students should not congregate at the entrance to a laboratory or lecture theatre, or at building entrances.
- Students should be made familiar with these rules by the person in charge of the lab or lecture theatre.

Section III: Safety rules for Offices, Research Labs & Workshops

The general safety rules and procedures, which apply to all personnel within the buildings of the Department, including staff, students and visitors, are detailed in the GENERAL SAFETY RULES section of this document. The following rules apply specifically to all personnel (including staff, post-graduate research students, visiting researchers and undergraduate project students) who are authorised to enter and work in research laboratories (additional rules apply for bioengineering labs, section IV) within the Department.

Responsibility

Overall responsibility for health and safety within the Department rests with the Head of Department. Although at a local level the responsibility for ensuring a safe working environment and safe working practices in individual research laboratories rests mainly with the individual research supervisor, or person in charge of the laboratory, all research workers have a responsibility not to endanger themselves and others by their actions or omissions.

Specialist safety consultants

In areas where specific identified hazards exist (lasers, chemical, electrical etc.), specialist safety consultants will be designated. These should be consulted prior to undertaking any work in these areas.

Authorised access to research laboratories

Access to each individual research laboratory is strictly limited at all times to those individuals authorised by the appropriate research supervisor or person in charge. In the case of visiting researchers and new staff the research supervisor is responsible for ensuring that the appropriate safety training is provided, if necessary by specialist safety consultants, before laboratory access is authorised.

Laboratories which contain specific identified hazards (e.g., laser systems, hazardous substances etc.) must be clearly marked with warning signs. Access to such areas is strictly limited to authorised personnel with the appropriate training and expertise. For such areas prior authorisation must be obtained from the research supervisor before visitors or other unauthorised personnel are permitted to either enter the laboratory or undertake any work within the laboratory.

General Laboratory Practice

1) All researchers have a responsibility to maintain a tidy well organised and safe laboratory environment with a safe means of rapid access to and egress from all working areas. Access to all services (water valves, electrical fuse boxes/switches etc.) should be kept clear at all times.

2) All experimental systems should be designed to be fail-safe.

3) All researchers should carry out a detailed assessment of the likely hazards and risks associated with their experimental systems and procedures. Research supervisors have a responsibility for ensuring that such systems and procedures meet the appropriate safety standards. Research supervisors must keep written records of risk assessments carried out (Appendix III) and provide, where necessary, appropriate written work instructions and additional written local safety rules. The essential steps that are taken in order to complete a risk assessment are as follows:

- Identify the hazards to health or safety arising from the activity or the workplace.
- Decide who might be harmed and how.
- Evaluate the risks and decide whether existing precautions are adequate or more needs to be done.
- Record your findings.
- Review your assessment and revise it if necessary.

A guidance document on the preparation of a risk assessment is available from the Departmental Safety Officer.

4) A copy of the risk assessment should be lodged with the Departmental Safety Officer. If in any doubt consult the appropriate safety consultant.

5) All researchers have a personal responsibility to make correct and full use of all protective clothing, personal protection equipment and safety aids provided in order to minimise risks.

6) Researchers must not attempt new procedures or tasks without consulting their supervisor and receiving appropriate safety training.

7) All researchers within a laboratory should be kept fully aware of day-to-day modifications carried out on experimental systems or operating procedures and clearly visible warning notices of any resulting potential hazard must be provided.

Unattended experiments/apparatus

Systems should not be left running unattended without consulting with the relevant research supervisor.
Where systems operate unattended for any period of time, an UNATTENDED APPARATUS form (Appendix IV) must be completed and clearly displayed beside the equipment. This notice must be removed when the condition no longer applies

When carrying out the risk assessment for such systems, special attention should be given to the effects of a loss of services (water, electricity etc.) on the safety of the system.

Computers & VDU Equipment

A booklet, outlining the correct use of VDU equipment, is available from the Departmental Safety Officer. Personnel using VDUs should consult this booklet.
Any users of VDU equipment who experience health problems, which they feel may be associated with their working environment or facilities, should contact the Student Health Centre for advice. If necessary a full ergonomic risk assessment will be carried out.

Protective Clothing and Personal Protective Equipment

It is the policy of the Department that, where necessary, staff and students should be provided with protective clothing and personal protective equipment. Provision of protective clothing (lab coats, overalls, aprons, gloves) is the responsibility of the research supervisor.

Laser safety

safety consultation (College Laser Safety Officer).

The NSAI determines the regulations governing the safe use of lasers, these are defined in Irish Standard IS EN 60825-1 1994.

All members of staff and postgraduates who work with laser equipment (Classes 2-4) must undertake the College 'Laser Safety Training course', details from Departmental or College Laser Safety officer. Postgraduate workers must satisfy their supervisors that that they have taken the safety course and are competent to use laser equipment. Evidence of attendance shall be given to the Dept Safety Officer. It is the responsibility of research supervisors to ensure all relevant safety precautions have been met.

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Class1: CW (>0.25s) 6.86㎽W	Class2: CW (>0.25s) 1.00mW	Class3A: CW (>0.25s) 5.00mW
Class3B: CW (>0.25s) 0.50mW	Class4: CW (>0.25s) >5.00mW	

Guide to Laser Classes

Summary of precautions in use

Requirements	Class 2	Class3A	Class3B	Class4
Remote lock	no requirements		connect to room or door circuits	
Key control	no requirements		remove key when not in use	
Beam attenuator	no requirements		When in use prevents inadvertent exposure	
Emission Indicator	no requirements		indicates laser is 'ON'	
Warning signs	no requirements		Follow precautions on signs	
Beam path	Terminate beam at end of useful length			
Specular reflection	no requirements			
Eye protection	no requirements		Required if engineering & administrative procedures no practicable	
Protective clothing	no requirements		sometimes required	Specific requirements
Training	no requirements		**required for operator & maintenance personnel**	

In the case of a laser Accident:

Get immediate medical attention at the **Royal Victoria Eye & Ear Hospital**. Adelaide Road. Dublin 2
Do not use the laboratory or disturb the equipment until after an accident investigation has been performed.
Report all laser accidents to the Departmental Safety Officer.

Chemical safety

safety consultation (Chemicals & Biohazards EO).

The use of dangerous chemicals is strictly controlled by specific legislation, *Safety, Health & Welfare at Work (CHEMICAL AGENTS) Regulations, 2001*. The Regulations cover all chemical agents in the workplace. In particular it applies to chemicals, which are classed as very toxic, toxic, harmful, corrosive or irritant. In brief the Regulations require the Department:

a) To assess the health risks which arise from hazardous substances in the workplace and to identify and provide effective controls to protect people's health.

b) To ensure that the controls are properly used and maintained in effective working order.

c) To provide training and information for those who may be affected.

d) To monitor exposure and implement health surveillance where necessary.

A copy of the regulations is available from the Departmental Safety Officer. A code of practice for the legislation is also available.

The following rules and procedures apply for all work involving chemical agents within the Department.

1) Hazardous substances may not be ordered (or otherwise procured) before a suitable and sufficient risk assessment has been carried out.
2) Hazardous substances or chemicals may only be procured through the Chief Technician's office on foot of a signed requisition from the research supervisor.
3) Chemical safety training is given as part of the annual Departmental safety day. No one may work with hazardous chemicals without having completed the Departmental safety course or an equivalent.
4) All personnel using a particular chemical should read the manufacturer's Material Safety Data Sheet (MSDS) for that chemical.
5) All work involving chemicals should, as far as is reasonably practical, be carried out in a fume hood making full use of the safety goggles, safety clothing and other safety aids provided.
6) For work requiring use of a fume cupboard, users must at all times adhere strictly to the guidelines for correct fume cupboard usage.
7) Suitable bottle carriers must be used, when transporting Winchester, Quart and Euro-bottle containers of chemical substances, in order to prevent accidental spillages and personal injuries.
8) All stocks of chemicals or hazardous substances used in the Department must be properly stored in suitable chemical storage presses.
9) All chemicals or hazardous substances used in the Department must be clearly labelled including warning signs.
10) All chemical waste must be clearly labelled and disposed of promptly through College's Hazardous Materials Facility (HMF). Containers sent to the HMF should be no more than 2/3 full.
11) Solvent waste should be divided into chlorinated and non-chlorinated waste (and kept apart from acid waste!). Special safety-cans for solvent waste may be obtained from the HMF.
12) All broken glassware and other "Sharps" should be disposed of in the Sharps bins provided. Bins containing contaminated sharps should be labelled and disposed of via the HMF

Compressed gases safety.

safety consultation (Chief Technician).

With compressed gases cylinder pressures may be as high as 300 bar and the gas or gas mixture may be flammable and/or toxic so great care must be exercised in their storage, handling and use. In addition the use of some gases will also be subject to the Chemical Safety Rules given above.

Flammable or Explosive Gases constitute a particular hazard within the laboratory environment. Guidance for use of such gases is provided in ***CP8 - The Safe Storage of Gaseous Hydrogen in Seamless Cylinders***

& Similar Containers: 1986, produced by the British Compressed Gases Association. Such gases may be used only after appropriate local safety rules and procedures have been established by the research supervisor, in consultation with the College Safety Officer.

Such rules and procedures must be formally recorded and clearly displayed along with appropriate warning notices at all entrances to the designated work area.

The following safety rules apply for all compressed Gases.

1) All users of compressed gases must be fully familiar with the appropriate manufacturer's identification codes and cylinder configurations.
2) Never remove or deface cylinder identification.
3) Store cylinders vertically and clamp securely to prevent toppling. Cylinders must not be left free standing at any time.
4) Store in a well-ventilated area away from any fire risk.
5) Valves should be closed and valve outlets plugged or blanked. Valve guards or caps should be securely fitted.
6) Separate cylinders of flammable gases from those of oxygen or oxidants by at least 3m.
7) Cylinders may not be used in a laboratory except by permission of the College Safety Officer. Only those cylinders, which are in current use, may be kept within the laboratory. Do not store cylinders in the laboratory.
8) Where possible pipe gases from a secure location outside the laboratory.
9) Ensure that you have read a current Material Safety Data Sheet (**MSDS**) for each gas in use in your laboratory and that these are clearly displayed either on or adjacent to the cylinder.
10) A "Compressed gas cylinder in use" form (Appendix V), listing all the compressed gas cylinders currently in use must be displayed outside the entrance to all laboratories containing compressed gases. A compressed gases warning sign (Appendix V) must also be displayed.
11) In rooms where flammable or other hazardous gases are in use, appropriate signage must be displayed on the room entrances.
12) Always use the appropriate trolley to move heavy cylinders.
13) Only suitably equipped and trained personnel may move gas cylinders.
14) Gas cylinders should not be transported in occupied lifts.
15) Use only approved regulators. Check their suitability for the gas in use.
16) It is recommended that regulators are either replaced or refurbished after (at maximum) 5 years from date of purchase.
17) Before connecting the cylinder to your apparatus check the complete system for suitability particularly in terms of pressure rating and materials compatibility. All new pipe work should be inspected and leak tested by qualified personnel.
18) Never transfer gas from one cylinder to another.
19) Report all faulty cylinder valves and regulators immediately to the Chief Technician.
20) Always close the main cylinder valve when a cylinder is not in use and ensure that an appropriate cylinder key is readily available for rapid shut down of cylinder output.

21) All compressed cylinder gases should be ordered through the Chief Technician's office on foot of a signed requisition from the research supervisor.

In addition to the above, the use of gas cylinders is governed by the protocol in Appendix V. Gas cylinders may not be used until all the necessary paperwork is completed.

Empty Cylinders

Empty cylinders are not truly empty. They contain gas at atmospheric pressure. Thus the cylinder still contains gas at a pressure of at least 1 bar. Depending on cylinder size, this can be a substantial quantity of toxic or flammable substance. It is important to ensure that gas containers are in a safe condition after use.

Before returning empty gas containers, a check should be carried out to ensure that:

- the cylinder valve is closed and not leaking.
- the cylinder valve outlet plug or cap nut, if supplied, has been securely refitted. This is particularly important if the contents of the container are toxic

More information can be found in the BOC booklet '***Safe Under Pressure'***.

Mechanical safety.

safety consultation (Chief Technician).

The guarding of dangerous parts of machines & machine tools is a legal requirement (British Standard BS5304 - Safety of Machinery provides a guideline). All the equipment in our Engineering Workshop complies with the standard. However, machine tools are potentially the most hazardous pieces of equipment housed by the Department and great care must be exercised in their use. Local specific safety rules apply to technical staff normally working within the Mechanical Workshop and they have been trained in the use of the full range of workshop equipment. The following rules therefore apply only to research workers and students who enter the Mechanical Workshop.

1) Any person entering the workshop, while machining is in progress, should wear the safety glasses provided.
2) Persons entering the workshop must not directly approach anyone operating machinery, but should wait until someone is available for consultation.
3) Only suitably qualified staff are permitted to operate the main workshop machinery.
4) Permission may be given, on an individual basis, for some under & post graduate members to operate a limited range of machinery. This is granted by the Chief Technician if, and only if, he is satisfied that the person in question has adequate experience in the use of the machinery in question.
5) Physical movements within the workshops should be calm and unhurried in nature.
6) Long hair must be 'tied up', jewellery and loose clothing should be secured prior to using workshop equipment.
7) All reasonable commands given by members the Technical Staff should be obeyed.
8) All machines involving dangerous moving mechanical parts must be fitted with the appropriate safety guards/interlocks and should be inspected regularly by appropriately qualified staff.
9) Welding operations of any kind are to be carried out by technical staff only. Appropriate eye protection and gloves must be worn whilst welding. A clearance certificate must be obtained from the College Safety Officer before welding in any location other than the Mechanical workshop.

For those contemplating the use of our workshops further guidance may be found in the HSE book, "***Health and safety in engineering workshops".*** Berkley Library, official publications section. (OPUB GB HEAC 14E:6 or OPUB GB HEAC 14J:1)

Electrical safety.

safety consultation (Dept Safety Officer).

Due to the variety of electrical appliances within the Department electricity is a major hazard. Research supervisors and persons in charge of research laboratories have a responsibility to ensure that, new, or visiting research, staff have received appropriate training in electrical safety before authorisation of access to research areas and that good general working practices prevail within their research laboratory.

The following electrical safety rules will apply to all mains-powered equipment used in research laboratories.

1) Alteration of or maintenance to any part of a building's electrical services may only be carried out by staff of the College Buildings Office.
2) All new mains-powered electrical equipment must be inspected by suitably qualified personnel prior to installation.
3) Repair and servicing of mains-powered electrical/electronic equipment must be carried out by, or under the supervision of, qualified electrical/electronic technical staff.
4) All electronic circuitry constructed or modified within the laboratory and which will ultimately be either directly mains-powered or electrically coupled to mains-powered units must be tested by qualified technical staff prior to the mains power being switched on.
5) All research supervisors have a responsibility to carry out periodically, detailed assessment of risks associated with electrical equipment under their control and to ensure that all electrical equipment is tested and maintained on an appropriate and regular basis.
6) Hazardous mains-powered equipment undergoing modification or test must not be left powered and unattended without consultation with the responsible member of the technical staff.
7) Areas containing equipment capable of generating high voltages, which may on occasion be exposed, must display warning signs on the entrance doors.
8) Experiments involving electrical equipment, which operate overnight must be designed to be inherently failsafe and capable of safe shut down via the mains isolation switch.
9) The use of rotary transformers without suitable ELCB protection is expressly forbidden
10) Mains cables and plugs should be regularly inspected. Faulty cables are to be replaced immediately.
11) Extension cables and sockets must not be left on the ground. If this cannot be avoided the cable/s must be housed in a ‘safety cable cover’.

VDU Safety Assessment:

Implementation of the Regulations on Computer Usage

Under the Safety Health and Welfare at work act 1989 and 1993 all employees who use a Visual Display Unit (VDU) for more than one hour on a daily basis should have their workstation assessed for any potential hazards. Issues such as poor ergonomics, unsatisfactory seating, poor lighting or glare etc. can be identified and rectified at an early stage. If these are not dealt with they can lead to Work Related Upper Limb Disorders (WRULD’s), effects on the eyes, fatigue and stress.

Department requirements

The Department is obliged to appoint a person (see Table page 1) as VDU assessor with the intention to provide training and information on the use of VDU's. This document will highlight the areas under which each VDU user should be assessed:

- **The Screen**:
  Characters and Image well defined no flickering, adjustable brightness and contrast, no reflective glare.

- **Keyboard:**
  Sufficient resting space for hands and forearms, it must rest on a matt surface, it must be detachable, it must positioned such that the elbow angle is between 70-90 degrees, the symbols legible.

- **Seating:**
  Chairs should be stable and allow freedom of movement; it should have adjustable height and have a backrest which is adjustable in height and tilt, it should have casters. Feet should rest on the floor, or a floor rest should be provided.

- **Environment:**
  There should be sufficient space to change position & vary movement. Lighting should be sufficient the ambient light should be 300/500 lux, and if required have florescent light diffusers fitted. There should be no glare or reflection from the screen or surface of the desk. The VDU should not be positioned facing a window with the light facing the user or backing onto a window such that the sunlight reflects off the screen, it should be positioned side-on where possible. In the event that the position of the VDU cannot be changed blinds (vertical type is recommended) should be provided where needed. In relation to radiation; WHO advises that levels of radiation from VDU's do not pose significant risk to health, most radiation emitted from VDU's occurs from the side of the unit. Therefore it is recommended not to position a VDU such that it is located side on to another user.

- **Employees:**
  Employees are required to take a break within the hour of starting work using a VDU and each hour thereafter. Preferable before the hour has lapsed. They are advised to move away from the VDU for a period.

- **Eyesight testing:**
  Eye tests should be undertaken before users commence using a VDU. Any local Optician can be used, to have the eye test. The cost of the eye test can be recovered from the department provided that prior notice is given of the eye test. If the employee has social welfare (PRSI) eligibility to an eye test this must be claimed before making any claim on Department/College. Ideally such tests should be undertaken at regular intervals.
  In the event that a large number of staff need to be catered for this can be accommodated through the Student health services who will make arrangements with an optician.

  If an employee already wears glasses and routine changes of lens are needed, "if these glasses are adequate also for VDU work, then the Department is not liable for the cost". Claims costs for should be submitted in advance with a copy of the prescription to the Head of Discipline who may then seek verification of the prescription from the College Occupation Health Service provider.

- **Further Information:**

For further information of all these issues the College safe Working with VDU's web site can be accessed at the following URL http://www.tcd.ie/Buildings/newsite/safetyworkingwithvdus.php

Note: Laptops are not covered under these regulations. Where laptops are used they should have docking stations where the keyboard is detachable. If by the owners choice they wish to use a laptop they must sign off on its use.

Section IV: Safety rules for work in the Bioengineering Centre TCD.

Safety consultation (Director of Centre, Dept Safety Officer).

Introduction:

With the creation of a purpose built centre for research on bioengineering topics, we are at last in a position to readily comply with all directives which relate to the testing, handling and transportation of biological material. Those regulations which the Centre's researchers/workers must obey are laid down within the instrument, 'Health & Welfare at Work (Biological Agents) Regulations 1994, amended 1998. The spirit of the document has been embodied in 'TCD Biological Hazards – Revised Document 1999, see Appendix VI.

The very nature of bioengineering research means that personnel will use a varied range of cutting, testing, and analysis machines/tools of both a mechanical & electrical nature. Thus all the foregoing safety rules apply to them. Additionally, because of the nature of the test materials and their by-products, bioengineering workers have an extra burden of rules, mostly health & hygiene, to observe. These may be covered under the following loose headings.

Respect: Much of the material used will have come from human cadavers. Workers should remember this and deal with the material and its subsequent disposal in a respectful manner.

Identification of Hazard: The level of biohazard presented by the work should be clearly identified (see later) and the appropriate rules complied with.

Storage: All biohazard material entering the Department/Centre must be placed in suitable bags to ensure its complete isolation. Bags must be tagged and show details of the material and a code number for trace-ability. The source of the material will be recorded in the project file along with any accompanying documentation. The presence of the material has to be indicated on the wall chart in the Tissue Prep Lab.

Material will be stored in a designated freezer or refrigerator within the Tissue Preparation Lab. If refrigeration is not possible the material will be stored in a sealed and labelled container in the Tissue Prep Lab. The storage facilities are examined regularly by the Departmental Bio Safety officer. Material will be disposed of if, it is past its project completion date, it is incorrectly stored or cannot be identified. Unidentifiable material will be treated as Class C material. Any biological material which is left unaccompanied outside the storage area will be immediately disposed of, whether bagged or not.

Transportation: Because of the physical architecture of the Bioengineering Centre the inter-lab transportation of biohazard material presents problems, the need to use 'public' corridors and lifts is a significant one. Material being transported should be 'doubly enclosed', i.e. first stored in some convenient 'sealable' sack or box and then placed in a closed carrying container (plastic carry box with handles). This procedure has the added advantage that, for the transportation of cadaveric material, non bio personnel or students will not be exposed to the sight of that which they may find distasteful.

Before a Project Commences

Before commencing work on any project involving biomaterials, <u>whether within the Centre or in another location,</u> all members of the Department or Bioengineering Centre must discuss their project with the Dept Bio Safety Officer. They must then comply with the various obligations laid down in Appendix VI. The project supervisor must complete and sign a 'Project Description Form' (Appendix VII) which is submitted to the Departmental Bio Safety Officer. Technicians will refuse any work of a bioengineering nature not accompanied by this form. A 'Project file' will be set up. This file will contain a copy of the project

description form and any other relevant data. Summary information relating to the project (its Title, names of project personnel, nature of the biological material and its location, etc) will be displayed on a wall chart in the relevant laboratory. In this way, all who use a laboratory will be aware of exposure risks.

Normally, work cannot be conducted if it falls outside the procedures described in this document, for example if it requires the use of a machine that has not been approved for use on biomaterials. In such a case the project will be discussed with the Departmental Bio Safety Officers who will make decisions regarding modification of the work or of the procedures.

Safe & Hygienic Practices for the handling of biological materials

Adherence to this code of practice is mandatory for all personnel working in biohazard areas. These procedures are the responsibility of the Departmental Bio Safety Officers. It is advisable that all staff in the Department have knowledge of the procedures and a commitment to ensuring that they are adhered to.

The Classification of Biological Materials:

Class A: Embalmed material
This is normally human cadaveric material obtained from anatomy rooms, but can be any biological tissue that has been embalmed.

Class B: Fresh Animal Material
Any fresh tissue obtained from butchers, etc, including material from cows, chickens, pigs, etc. This material will generally not have been disinfected.

Class C: Fresh Human Material
This carries the risks of Class B, with added risks from specifically human diseases.

Unless otherwise stated, the procedures given in this document are written with respect to Class B - *fresh animal material.*
In using Classes A or C the following deviations from procedure apply:

Class A: It is generally accepted that the risk of infection from embalmed material is negligible, so this material could indeed be handled in the same way as any non-biological material, having the same concern for other safety aspects, e.g. the creation of aerosols, dust, etc. However, as a matter of good practice it will be normal to use the same procedures for Class A as for Class B. In special and specific cases departure form the foregoing restriction may, with the approval of the Departmental BioSafety Officer, be approved.

Class C: All Class B procedures will apply, and in addition the following precautions must be taken:

If Class C material (i.e. fresh human material) is being handled, all personnel working on the project must be inoculated against Tetanus, and against Hepatitis B. Anyone who is immuno-compromised or pregnant must also be assessed to determine their state of risk.

Note: Inoculations against Hepatitis B &/or Tetanus take 6-8 months to become effective, this precludes undergraduates from handling Class C material.

For Class C materials, the donor's age, sex and pre-morbid health will be recorded. The test material will be subjected to virology testing for, Hepatitis B & C and for HIV 1 &2. No work will be carried out on the material until the results of the virology tests are available.

Storage of Class C material will be restricted to the absolute minimum; normally material will not be stored for longer than 6 weeks.

Double gloves must be worn whenever Class C material is handled.

Class C material will be disposed of in special bags which will clearly identify the level of hazard.

Safe Procedures to be followed inside all Bioengineering Labs:
In addition to the foregoing rules:
The entry to the Laboratory will be clearly marked to inform all of its nature and the precautions required within it. Specific operating procedures (see below) will be clearly displayed within the room.
Wear a pair of the safety gloves provided

- Do not enter this room without wearing appropriate protective clothing. Always wear the disposable safety gloves provided.
- Remove all contaminated clothing on leaving the room, and place in the disposal and laundry bins provided.
- Make sure that the Tissue preparation lab's air extraction system is switched on.
- If anyone else is working in this room at the same time as you, tell them what you are doing and ensure that they too are protected against hazard.
- If any tools or other items are brought into this room, clean and disinfect them after use, only then may they be removed from the room.

Wash your hands:
- at the start and end of your work.
- Immediately, if hands are soiled with body fluids or tissues.
- after removing gloves.
- before eating, drinking, smoking or any activity involving hand-to- eye/nose/mouth.

Do not eat, drink or touch any exposed areas of your face etc in a bioengineering lab.

Wear the appropriate lab coat and gloves at all times. If you have any cuts or grazes these should be covered with sticking plaster.

Wear a disposable apron, goggles and mask covering the nose and mouth if there is the possibility of splashing liquids or of creating airborne material (aerosols, etc.). If you can't wear goggles (due to wearing spectacles for example) wear a plastic face shield. Contact lenses should not be worn if avoidable. Long hair should be tied back. Avoid glove tears or punctures due to sharp instruments, bone edges, etc. If glove tears occur, remove the offending article, wash and re-glove.

If you are injured during work, and especially if the injury involves penetration of the skin, you should:
- immediately wash the affected area with water and with a 1:10 solution of bleach in water.
- If a needle or sharp puncture has occurred, bleeding should be forced.
- Report immediately to a person in authority.
- follow the incident up, as necessary, with a visit to the Student Health Service or your own doctor.
- Report the incident to the Departmental Safety Officer

Using Testing Equipment, Tools, Instruments & Experimental Rigs

Work can only be carried out on authorised equipment (seek permission for use from the owner or custodian of the equipment).

If, as occasion may demand, you are working with general departmental equipment or machines you must ensure that all bio contaminants are removed before the equipment is physically returned or handed back into the charge of its owner or custodian. If the equipment is of the 'large, fixed type' and so is being used in a general lab or testing area, you must arrange suitable barriers around the equipment and post warnings of the Bio Hazard your work presents. It is your responsibility to ensure that inadvertent contact with the hazard cannot occur. Remember the possibility that you may contaminate knobs, switches etc by hand contact. If it is not possible to properly clean these aspects of a machine or instrument after use, then think before you work and cover them (eg. 'clingfilm') before you begin.
Custom built rigs for experimental work may, periodically, need modifications this may necessitate their return to the Departmental workshops. Ensure that they are completely decontaminated and give suitable evidence of this to the workshop staff. They are justifiably very wary of devices which have been exposed to bio hazard.

If working in one of the bio testing labs erect signs and barriers around the Bio risk area. Do not carry out work unless all personnel inside the area are protected and aware of the precautions required. Use disposable drapes to protect all surfaces that may come into contact with biological material. Remember, many surfaces cannot be cleaned effectively after contact has occurred.

Erect the appropriate guards and shields provided with the machine. These are designed to protect you from contact with liquids and airborne material, and also to protect other parts of the machine.

Use portable air-extraction facilities if appropriate.

After use, thoroughly clean all contaminated parts of the machine or instrument, use a non-corrosive disinfectant for this purpose.

If coolant is required (e.g. with lathes and other cutting machines) install the special coolant supply unit.

Clean work surfaces: Clean working surfaces by rinsing in water, wiping with a 1:10 solution of bleach in water, waiting for at least ten minutes and finally rinsing in water. Metallic tools, machines and equipment should be cleaned using a special non-corrosive disinfectant which is provided.

Avoid splashing fluids or creating airborne material (aerosols, dust, etc.). Be aware of the presence of other people nearby who may be thus exposed by your work.

Do not work with people who ignore these procedures.
It is your responsibility to ensure your own safety & the safety of those around you.

Bio-material should be removed from its storage bags for the minimum length of time. All material should be returned to storage or disposed of safely. Material to be disposed of should be placed in a special bag, sealed and placed in the "Disposal" bin in the Tissue preparation lab. Other disposable items, such as aprons, gloves and instruments should be disposed of in the same way, taking care to prevent sharps from puncturing the bags. Contaminated non-disposable items (e.g. lab coats) should be placed in a separate container for cleaning.
Material should be encapsulated, if possible, during preparation and testing, to prevent escape of blood and other fluids.

Use clear plastic sheeting ('cling-film') to cover the surfaces of all instrument panels, computer keyboards, etc. Dispose of this covering material after use.

Report any potentially dangerous incident to the Dept Safety Officer or to someone in authority.

Disposal of Bio-Material : Material will be disposed of as soon as possible after completion of a project. The Departmental Bio Safety Officer will regularly inspect the stores and remove material as appropriate (see Storage of Material). Disposal will be recorded in the project file.

A bin will be provided in the Tissue preparation lab for disposal of biological material, gloves, aprons, disposable instruments, etc., which will be contained in suitable bags. Special containers will be available for sharp objects such as needles which may pierce the normal bags. Class C material will be placed in special bags.

A second bin will be provided for non-disposable clothing etc which can be cleaned.

Material will be decontaminated and disposed of at an appropriate bio-waste facility; currently this facility is within the Moyne Institute.

Safe Procedures in the Tissue Engineering Laboratory's:

This laboratory is a specialist unit and is not normally accessible to undergraduate students. Where they are given access they must at all times be under the guidance of their supervisors and also have been instructed in the specific & additional safety aspects that apply to the lab and for the materials they use in their work. The level of biohazard present within the lab is low, hazard class B or II, and of course, all the foregoing bio-safety rules pertain. Trinity College's 'best bio-laboratory practice' will be followed by all who work in the lab and all personnel must be properly clad in lab coat and disposable gloves. If necessary face masks should be used. Great care should be used in the proper disposal of all used and contaminated material.
Do not unnecessarily expose other staff to hazardous materials.

Biomaterials Laboratory - SEO (Senior Experimental Officer)
Tissue Testing Laboratory - SEO
Tissue Preparation Laboratory - SEO
Tissue Engineering Laboratory - Tissue Lab Manager
Tissue Engineering Laboratory II the New laboratory - Tissue Lab Manager

Laboratory Coat Protocol

The following RULES will apply:-

- Each postgraduate/staff/researcher will be given two Howie Laboratory coats - new arrivals will be given coats before research work commences, the cost of these coats will be borne by the appropriate research grant/funds. These may be colour coded with the owners names embroidered on them.
- Undergraduate/Visitor coats will be provided and managed by the department - SEO in charge of the Laboratories.
- It will be the responsibility of each individual to look after their own coats.
- A washing machine (washer/condenser dryer) is available and conditions for use have been established.
- These Laboratories will be administered by the SEO/Tissue Lab Manager respectively, any issues of concern will be addressed in the following order SEO/Tissue Lab Manager - Head of Dept. - Dept. Safety Officer.

IT IS MANDATORY for any person be they Staff/Post-Graduate/Undergraduate/Visitor, or whoever, requires the use of the facilities available in any of the Bio/Engineering laboratories must wear the following:-

- Laboratory Coat
- Gloves
- Glasses

Failure to comply will result in permission to work being withdrawn with immediate effect.
The SEO/Tissue Lab Manager will ensure that all users adhere to this regulation.

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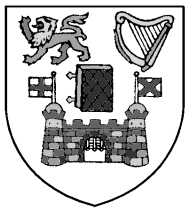
If bioengineering personnel fail to adhere to these procedures their project work will be reviewed and may be cancelled by the Departmental Bio Safety Officer.
The Dept Safety Officer will also report this 'failure to comply' to the College Safety Committee.

Appendix I (the smoking initiative)

University of Dublin, Trinity College	College Safety Office

University of Dublin
Trinity College



SMOKING IN COLLEGE

Adopted by the Board of College March 04

1. PURPOSE

To state College policy with regard to smoking in College.

2. SCOPE

Under the Tobacco Smoking (Prohibition) Regulations, 2003, tobacco smoking in College buildings and enclosed workplaces is prohibited with the exception of bedrooms in College Residences.

3. POLICY

It is the policy of the Provost, Fellows and Scholars of the University of Dublin, Trinity College to comply with the legislation on smoking and with legislation designed to protect the Safety, Health and Welfare of employees and others 'in the workplace. It is College policy to promote and facilitate good health among staff and students of the College. To this end all buildings and vehicles in the ownership or use of College are 'smoke-free' and smoking is prohibited within such buildings or vehicles

The Head of Department or Section Head is responsible for implementation of this policy in his/her area of responsibility. The Head of Building is responsible for implementation 'in common areas in multi-user buildings. If the Head of Building or Head of Department is unable to satisfactorily resolve any issue covered by this policy the issue may be referred to the appropriate Senior OfFicer - the Faculty Dean or Senior Dean in the case of academic staff, the Junior Dean in die case of students and the College Secretary in the case of non-academic staff.

Advice and assistance for smokers who would like to quit smoking is available from:

The Student Health Service, Student Health Centre, Houses 47/52, College, Tel. 608 1556.

who ran smoking cessation courses at regular intervals and who have trained smoking cessation counsellors on their staff and from

The Student Counselling Service, 199-200 Pearse Street, Trinity College, Dublin 2. Entrance via College.
Tel.: 6081407 Email: student-counselling@tcd.ie

The College Safety Committee will review this policy with changes in the Legislation and will consider the experience of Departments in implementing this policy. The College Safety Committee will welcome comments and submissions on the Smoking Policy.

Ext: 1914 Email: tom.merriman@tcd.ie Fax:6793799

Appendix II ACCIDENT/INCIDENT REPORT FORM

This form must be completed by the Department Head, Chief Technician, or Departmental Safety Officer as soon as possible after any accident has occurred. This is a requirement under the College's Employer & Public Liability policies. In the case of staff injuries, the original form should be retained by the Departmental Safety Officer, & copies sent to (1) Mr. T. Merriman, West Chapel (Secretary to the College Safety Committee), & (2) Ms P. Gray, West Chapel (for insurance purposes).

Name: …….. **Staff** ☐ **Student** ☐ **Other** ☐

Department: ……..……..

Job Title: …… **Hours of Work:** ……..……..

Date & Time of Alleged Accident: ……....

Place/Building Name: ……..……..

Grade of Accident: **Minor** ☐ **Moderate** ☐ **Severe** ☐

Brief Particulars: ……..……...
(Continue overleaf if necessary)

Nature of Injury: …….

(If to limb or eye state whether left or right)……..

What action was taken to treat
Or minimize injury or damage? …….

In cases or moderate or severe accidents please state the names & addresses of any witnesses:

(1) ……...

(2) ……...

Are you satisfied that an accident occurred
At the time, date and place stated? **Yes** ☐ **No** ☐

Was the person authorised to be in that place
at that time for the purpose of his/her work? **Yes** ☐ **No** ☐

What was the person doing at the time of the accident? ……..

Was this something authorized or permitted to be
Done for the purpose of his/her work? **Yes** ☐ **No** ☐

To whom was the accident reported? ……

When was it first reported? ……..

Signed: …….. **Date:** ……

*Minor = Onsite treatment; Moderate = First aid & referred for medical attention; Severe = Ambulance called.

Appendix III

GUIDANCE NOTES ON COMPLETING THE RISK ASSESSMENT FORM

Hazards

- Only list those hazards that you could reasonably expect to cause significant injuries or affect several people. (identification of hazards for guidance)
- Will the work require the use of machines and tools? How can you or anyone else be injured?
- Will the work require the use of chemicals? If so, check safety data sheets for harmful effects and any exposure limits.
- Will the work produce any fumes, vapours, dust or particles? Can they cause significant harrn?
- Are there any significant hazards due to where the work is to be done, such as confined space, at height, poor lighting, high/low temperature?
- Specific hazards should be assessed on a separate risk assessment form and cross- referenced with this document. (e.g. Compressed gases, Cryogens, etc.)

Who might be exposed:

- Include yourself, your supervisor, others working in or passing through the work area.
- Those more vulnerable or less experienced should be highlighted as they will be more at risk, such as people unfamiliar with the work area, disabled or with medical conditions, e.g. Asthma.

Existing control measures:

- List the control measures in place for each of the significant hazards, such as machine guards, ventilation system, use of Personal Protective Equipment (PPE), generic safety method statement/procedure.
- Remember appropriate training is a control measure and should be listed.
- List any Permits to Work, which may be in force. (e.g. Hot work permits)

Are risks adequately controlled?

- With all the existing control measures in place, do any of the significant hazards still have a potential to cause significant harm.
- Use your judgement as to how the work is to be done, by whom and where.

Additional controls:

- List the additional control measures, for each of the significant hazards, which are required to reduce the risk to the lowest so far as is reasonably practicable.
- Additional measures may include such things as: increased ventilation, Permit to Work, confined space entry permit, barriers, etc.

The Identification of Hazards

- Fire
- Fall of persons or of objects/material from height or same level
- Chemicals:- toxic irritant corrosive flammable explosive or oxidising substances
- Contractors on site/in departments
- Manual handling
- Use of VDU's
- Use of hazardous machinery
- Carcinogens, teratogens or mutagens
- Electricity (including static)
- Poor housekeeping standards
- Waste disposal
- Explosions:- chemical, dust, bomb or incendiary
- Arson
- Compressed gases
- Mechanical lifting operations
- Noise and vibration
- Biologically hazardous agents
- Physically hazardous agents
- Ionising and non ionising radiation
- Use of hand and power tools
- Stored energy
- High pressure machinery or containers
- Lighting heating and ventilation
- Confined spaces
- Cleaning operations
- Unguarded machinery
- Unsafe work practices
- Visitors on site/ in Department
- Foreign visitors/students
- Disabled students/visitors
- Acute/ chronic effects of long term exposure to chemicals
- Staff and student placement/outside work experience
- Dusts fumes particulates and aerosols
- Allergens
- Environmental contamination/pollution
- Lack of emergency procedures

- New equipment plant or work practices
- Injury to third party or non College staff
- Maintenance and repairs to hazardous machinery or areas
- Lack of personal protective equipment
- Contact with moving objects or impact injuries
- Hazardous by products of experiments or projects
- Late night, solo, or unsupervised working
- Contact with hot /cold surfaces or substances
- Bullying and Harassment
- Stress

Dept of Mechanical & Manufacturing Engineering: Risk Assessment Form

Risk Assessment # ……	Location	Building – Room etc

Brief Outline of work activity	

Hazards/Risks		L		M		H	
		L		M		H	
		L		M		H	
		L		M		H	
		L		M		H	
		L		M		H	
		L		M		H	
		L		M		H	
		L		M		H	

Personnel exposed		approximate # of personnel exposed	

Existing control measures	

Are Risks adequately Controlled Yes q No q

If NO, list additional controls & actions required	**additional controls**	**action by:**

Completed by:	Name:	Signature:	Date

Supervisor:	Name:	Signature:	Date

Date of reviews:					

A copy of this form must be lodged with the Departmental Safety Officer

Appendix IV

UNATTENDED APPARATUS

Please Leave Running.

Location:……..

Type of Apparatus	

Services used	**Electricity**	**Water**	**3 Phase Power**	**Compressed gases**	**In room**	
					yes	**no**

Special Hazards	

To Shutdown in an emergency

Contacts			
Name			
Telephone #			

Please read the instructions overleaf before completing this form

NB: Equipment should only be left running when absolutely necessary.

INSTRUCTIONS FOR COMPLETING THIS NOTICE

If unattended equipment is left running, a completed copy of this notice must be left on the outside of the main doorway of the workroom/lab. In certain circumstances, it may be prudent to attach an additional copy(ies) of this notice to the equipment concerned.

When completing this notice please:

1) Print clearly.

2) Define the item of equipment to which the notice refers in a clear manner, for example 'Vacuum rig A' referring to a vacuum system with the letter 'A' boldly displayed on it. If necessary, define the location of the machine to avoid confusion.

3) Tick the appropriate boxes to indicate the service/s being used and name the cylinder gases/piped gases (if any). If a gas cylinder is used rather than piped gas, check the appropriate box.

4) Provide information relating to any special hazards, such as high temperature, high voltage etc, in the 'Hazards' section.

5) State the emergency shutdown procedure in an ordered sequence,
for example:
    - CLOSE VALVE 'A'
    - OPEN VALVE 'B'
    - ISOLATE MAINS ELECTRICAL SUPPLY AT SOCKET 'C'
    - TURN OFF COOLING WATER AT TAP 'D'

    Ensure you clearly label the named valves, sockets, etc,.

6) State your name, home address and telephone number and include details of an alternate who is reasonably familiar with the equipment in the 'Now contact' section.

Remove this notice from display when the equipment is no longer running.

Appendix V Gas Cylinders Safety

Use of Gas cylinders in the Department of Mechanical & Manufacturing Eng TCD.

Before beginning any experiment requiring the use of a compressed/ liquified gas that must necessarily be imported into a laboratory within a cylinder a Risk Assessment form (Appendix III) and a Compressed Gas Permit (see below) must both be completed & countersigned by the relevant supervisor and the Departmental Safety Officer. The Departmental Safety Officer shall retain a file copy of each such Permit Form. A copy of the completed Gas Permit shall be sent to the College Safety Officer.

Copies of the Compressed Gas Permit form must be exhibited on the outer door/s of the laboratory in question during the period of use of the cylinder & shall be removed once the experiment is completed. The gas cylinder in question is then removed from the interior of the building. Additionally, notices stating the name of the gas being used and showing 24 hour contact details for each of the researcher, his/her supervisor and the relevant Departmental Safety Officer shall be affixed to all doors opening into the laboratory (see notice below).

An additional copy of the Compressed Gas Permit form shall be displayed beside the fire safety panel at the principal entrance to Parsons building (in a location known to the Fire Brigade). This notice shall only be removed once the experiment has been completed and the gas cylinder in question has been removed from the interior of the building.

(b) All such gases shall be contained in approved cylinders of appropriate structural quality which are fitted with approved regulator valves suitable for the pressures involved.

(c) Gas cylinders which are to be brought into the building for use within the building shall firstly be placed in an open air location and fitted with approved regulators which shall be pressurised and tested for leaks at that location. Regulators may not be fitted or removed inside the building.

(d) Gas cylinders which are brought into laboratories shall, as far as is practicable, be of the minimum size and capacity consistent with the experimental work which is to be carried out.

(e) Gas cylinders shall be moved into and out of the building using a properly constructed trolley or other appropriate means.

(f) When used in laboratories gas cylinders shall be properly secured by an approved restraint system.

(g) Experiments requiring the use of special gases shall generally be conducted in such a manner that the point-of-use of the gas is within an approved fume hood.

(h) Cylinders containing toxic, flammable and pyrophoric gases with a NFPA rating system number of 3 or more may not be used within the building.

Flexible or other hoses used to deliver gas from a regulator outlet to the point-of-use must be of appropriate material and shall be securely attached to flanges, spigots, etc. in a gas-tight manner.

Experimental work must be scheduled in such a manner that the need to keep gas cylinders in laboratories overnight or at weekends is minimised.

The copy Compressed Gas Permit forms located on the doors of the relevant laboratory and at the relevant reception desk shall be retrieved and destroyed immediately after the experiment has been completed and the gas cylinder(s) have been removed from the interior of the building.

(m) On the expiry of a Compressed Gas Permit the Department Safety Officer shall confirm that the gas container has been removed and notices withdrawn.

CAUTION ! !

Compressed gas cylinder in use

Location: .....

Gas types: .....

Hazards: (toxic, flammable etc.).....

.....

.....

IN CASE OF EMERGENCY CONTACT

Name:..... ..... **Tel**.....

Name:..... ..... **Tel**.....

Name:..... ..... **Tel**.....

Department of Mechanical & Manufacturing Engineering
Trinity College Dublin

Compressed Gas Permit Form

This form must be completed and countersigned by the research supervisor and the Departmental Safety Officer before the commencement of any experiment which of necessity requires the use of a cylinder/s of compressed gas within any laboratory in the Department's buildings.

Your attention is drawn to the foregoing mandatory conditions relating to the use of cylinders of compressed gases within laboratories.

What gas do you propose to use? (CO, NH3, H2C=CH2, etc)	
Where do you propose to use this gas? (Building + Room number)	
When will your experiment (a) start (date + time) (b) finish (date + time)	

Provide an outline of your experimental set-up:

DO NOT FORGET TO COMPLETE THE NORMAL RISK ASSESSMENT FORM & ATTACH A COPY TO THIS DOCUMENT

Signatures:

Researcher:…….…….....**Date:**…….....

Supervisor: …….…….....**Date**:…….....

Safety Officer:…….…….....**Date:**…….....

N.B.
A COPY OF THIS COMPLETED FORM MUST BE SENT TO THE COLLEGE SAFETY OFFICER.

Appendix V Radiological Safety Code for the Use of Sources of Ionising Radiation.

(Revised June 2004)

1. This code applies to all departments using radioactive isotopes or X-ray apparatus for any purpose unless exempted under Paragraph 2.
Its requirements are additional to those imposed in the licence granted to the College by the Radiological Protection Institute of Ireland. This code is specifically cited in the schedules to the licence.

2. The code does not apply in the following cases:-

(a) Sealed radioactive sources or apparatus for which the dose rate does not exceed 1 microsievert per hour at any point situated 0.1 m from any accessible part of the surface.

(b) Any radioactive substances, where:

(1) the quantities involved do not exceed in total the exemption values set out in column 2 of Table A to Annex 1 of S.I. No. 125 of 2000.

Or

(2) the concentrations of radioactivity per unit mass do not exceed the exemption values set out in column 3 of Table A to Annex 1 of S.I. No. 125 of 2000.

(c) Any other substances or apparatus exempted under Article 4 of S.I. No. 125 of 2000.

3. Formal control of sources of ionising radiation in all College departments shall be exercised by the College Radiological Safety Committee. All research projects making use of sources of ionising radiation must have the approval of the Committee & such approval must be obtained at the planning stage of the project. Any significant changes to the project which may affect radiological protection measures in place, must also be notified to and approved by the Committee.

4. Individual heads of departments are responsible for the safe use of sources of ionising radiation within their departments.

5. Each head of a department where a source or sources of ionising radiation are used shall nominate, for approval by the College Radiological Safety Committee & the Radiological Protection Institute of Ireland, one member of the departmental staff who will be responsible for the keeping of records and the day to day management of radiological safety issues within the department. This individual will be known as the Departmental Radiological Protection Supervisor (DRPS) The DRPS plays a supervisory role in assisting College to comply with the requirements of the legislation and in ensuring compliance with College Radiation Safety Procedures (local rules) and best practice procedures.

Work with sources of ionising radiation may not be carried out in any department without the written permission of the Departmental Radiological Protection Supervisor in the first instance. Working with ionising radiation in College is on a

permit to work basis. Only authorised personnel are entitled to work with ionising radiation. Any persons intending to work with radioactive materials (RAM), whether these are sealed or unsealed sources, or with irradiating apparatus, must first register with their Departmental Radiological Protection Supervisor and complete a registration form (Rad1, Rad2, or Rad3) to seek permission to use ionising radiation in College. The Departmental Radiological Protection Supervisor is authorised to refuse permission to undertake work with ionising radiation in the department if s/he is not satisfied that the necessary safety requirements are met. The Departmental Radiological Protection Supervisor is also authorised to require that a work activity with ionising radiation, which he/ she deems to be unsafe, or in contravention of the College licence requirements, or in contravention of the College Radiation Safety Procedures, cease or be suspended until appropriate control measures are implemented. The Departmental Radiological Protection Supervisor should, where possible, consult with the College Radiological Protection Officer (RPO) before taking such action, but may, in the event of an emergency for instance, or where consultation with the RPO is not possible, make such a decision without consultation.

Note: By law, 'the undertaking', ie. the College, heads of individual departments and each individual person working with sources of ionising radiation carries ultimate responsibility for compliance with radiation legislation. This responsibility can not be delegated to the DRPS nor to the RPO.

Each individual in College working with ionising radiation is legally responsible for taking all due care for their own health and safety and the health and safety of anyone who may be affected by their work activities. All radiation workers in College are obliged to familiarise themselves with and to comply with the conditions of the College licence, and this Radiological Safety Code for the Use of Sources of Ionising Radiation. All radiation workers in College are obliged to consult with their DRPS before undertaking any work with ionising radiation, and as necessary during the course of their work. All radiation workers in College are obliged to co-operate with their DRPS in complying with the provisions of this Radiological Safety Code, and are obliged to comply with any recommendations or advice given by the DRPS.

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6. Overall supervision and advice on radiological safety is the responsibility of the College Radiological Protection Officer (RPO).

The College Radiological Protection Officer is Ms. Elaine Lee. Phone 6082887, E-Mail elee@tcd.ie
The Radiological Protection Officer must be consulted on certain issues but the ultimate responsibility for radiation safety in College rests with the College & with individuals within College departments who are working with radiation.

The Radiological Protection Officer must be consulted with in relation to the following matters;

a) The examination and testing of protective devices and measuring instruments.

b) The prior critical examination of plans for installations from the point of view of radiation protection.

c) The acceptance into service of new or modified sources from the point of view of radiation protection.

d) The regular checking of the effectiveness of protective devices and techniques.

e) The regular calibration of measuring instruments, & the regular checking that they are serviceable & correctly used.

7. All persons working in areas where dose rates exceed the values given in paragraph 2a or where there are radioactive sources of greater activities / concentrations than the values given in paragraph 2b should be issued with a copy of this code by their departmental radiological protection supervisor (DRPS). The DRPS should be satisfied as to the competence of each such individual for the operations to will carry out.

8. If a possibility of exposure to significant levels (i.e., greater than 1 mSv. year $^{-1}$) of penetrating radiation exists, the DRPS will arrange for the issue of personal dosimeters to each person who may be exposed. The DRPS will ensure that a record is kept of the exposures recorded by such personal dosimeters. Such records must be kept indefinitely. A dosimeter must never be used by more than one person.

9. A record will be kept by each department of the quantity and nature of each radionuclide present in the department. This record will also give details of the usage and disposal of the radionuclide.

10. Each room in which radioactive materials or radiation sources are stored or used will have the internationally agreed black and yellow symbol for radiation prominently displayed at the entrance to the room. A list of safety rules must be permanently mounted in a conspicuous position within the room.

11. The Departmental Radiological Protection Supervisor must approve the ordering of all sources of ionising radiation at departmental level, whether sealed, unsealed or new irradiating apparatus and must officially sign off order forms. These safety procedures prevent radioactive sources or radio-chemicals, not on the College licence, entering College they also ensure that the quantities of materials ordered are within specified limits on our licence. These procedures also prevent unauthorised personnel from ordering &/or working with radioactive materials. The ordering of sources of ionising radiation by e-mail is prohibited.

12. All licensed radioactive sources shall be shielded, packaged & transported in accordance with the International Atomic Energy Agency's Regulations for the safe transport of radioactive material, & in accordance with the conditions outlined in the College licence.
The DRPS will ensure that users of radionuclides understand the international transport labels affixed to the packages in which isotopes are delivered & the relative hazards which are indicated by such labelling, so that appropriate precautions can be taken. Please note that College is not licensed to transport radioactive substances.

13. The DRPS must be informed quickly of all spills or other accidents involving radioactive materials. The College Radiological Protection Officer must also be informed if the possibility of contamination or external exposure of workers or other persons exists.

14. In the event of an emergency situation, the Departmental Radiological Protection Supervisor should be contacted immediately at the phone numbers outlined above to give advice & guidance on procedures to be followed. If the DRPS is not immediately available the College RPO should be contacted at the number given or on the following mobile phone number: 087-2644107 (emergencies only). The College security centre should also be contacted at ext. 1999 & advised of the situation. If the emergency services need to be contacted such as the fire brigade or ambulance, these should be contacted through the College security staff who can open gates for them and direct them into the appropriate area of College etc.
Examples of emergency situations would include fire or explosion in a building / room containing radioactive materials, loss or theft of any licensed item, damage to, leakage from or other incident / accident involving a licensed item. In the event of an emergency situation, the RPII should also be contacted and notified at 01-2697766. They can also offer advice and guidance.
Each radiation worker must familiarise themselves with individual departmental emergency procedures and must discuss this matter, and their role in implementing departmental emergency procedures with their departmental radiological protection supervisor before commencing work with sources of ionising radiation.
More detailed emergency procedures are outlined in the College document entitled 'College Radiation Emergency Procedures'. All users of ionising radiation in College should be familiar with these procedures.

15. The Departmental Radiological Protection Supervisor will arrange for the disposal of solid radioactive waste from laboratories using radioactive materials at regular intervals & in accordance with the requirements of the Radiological Protection Institute of Ireland. Such waste should be stored in appropriate containers under cover in a vermin free environment until collection for disposal is arranged.

When disposing of waste you must comply with the following procedures;

Solid waste: Is placed in UN approved yellow bags. Only 'soft solid waste' should be put in these bags, ie. nothing should be put in a yellow bag with a sharp edge which may pierce the bag, examples of types of waste which should not be placed in yellow bags would include; pippette tips, disposable Pasteur pippettes, microfuge tubes etc. These types of wastes are considered 'sharps' and must be placed either in an appropriate sized sharps bin (6.5, 12.5, or 23 litre bins) or in a yellow bag within a 50 litre yellow 'Sulu Bin'.
The waste disposal contractors will not accept bags if they have been pierced by sharp materials, and the rejected bags then have to be returned to the producer for recontainment in the appropriate waste bin. Correct containment at the outset will therefore save a lot of time.
All 'soft solid wastes' can be placed in yellow bags, ie. gloves etc.
A number of conditions must also be satisfied in relation to such bags of soft solid waste before the waste disposal contractors will accept these bags.

- Bags must not be more than 75% full.
- Only 500 gauge UN approved bags to be used.
- No radioactive tape or markings.
- Bags must be properly secured and tagged.
- Wet or soiled bags will not be accepted.
- Bags containing sharps will not be accepted.
- Bags, which are holed, damaged or leaking will not be accepted.

The waste must then be stored in a secure area, to which access is only available through the DRPS, until it has decayed to background levels, at which time the College RPO should be contacted to monitor the bags with the DRPS and arrange a waste collection through the waste disposal contractors. The DRPS must complete a C1 Form (required by the Waste Mgt. Regulations 1998). The waste disposal contractors will not take a waste consignment from any dept. without a completed C1 form. A hazardous waste code number has to be noted on this form. It is up to each DRPS to review the various categories of waste indicated and determine which is most appropriate for the waste being produced by their department, however, for many departments, the Category: 'Waste from human or animal health care and or related research', code no. 180000, is appropriate.

Liquid waste: Liquid wastes, such as waste scintillation fluids etc. must be certified on the College approved triplicate forms, as being within the approved limits set by S.I. 125 of 2000, before being disposed of down approved drains. The Departmental Radiological Protection Supervisor must sign these disposal certificates before disposal takes place. One copy of these certificates must be sent to the College RPO annually and one copy should be kept on departmental files

16. Non-inflammable water soluble waste may be disposed of down designated drains provided that the quantity or the concentration of each of the radionuclides is within the limits outlined in Table A of SI 125 of 2000. Such disposals must

only be made via dedicated sinks or shores, which are directly connected to a municipal foulwater sewer.

18. Inflammable or non water soluble waste, such as certain scintillator fluids, must only be disposed of according to the agreed College procedures for the disposal of chemical waste. All such waste must be certified by the DRPS before disposal and must comply with the parameters outlined in SI 125 of 200. Disposal of such waste down the drains is strictly forbidden.

19. Any proposal to undertake work with sources of ionising radiation in conjunction with the College Bioresources Unit, must receive the prior written approval of both the DRPS in the Bioresources Unit and the College RPO. All such work proposals must include a written risk assessment outlining in detail the work to be undertaken, the procedures involved, and the protective and control measures that will be implemented on a step by step basis, right through to the final step of waste management and disposal. Where external bodies that are already licensed by the RPII, are involved in undertaking such work, this work will be undertaken under the control of their own Radiological Protection Officer and in accordance with their own individual licence conditions. They will merely be authorised to use our facilities subject to any conditions as may be specified, and with the prior approval of the DRPS, the College RPO and the RPII. Such external bodies will be responsible for all aspects of the work undertaken, including the safe storage, removal and disposal of waste produced.

20. The College Radiological Protection Officer will inspect each department's records at intervals and will advise on any other precautions that may from time to time be required.

21. The RPO may report to the College Radiological Safety Committee any department failing to comply with the safety rules relating to radiological protection. The Committee may invoke disciplinary procedures, which may include the suspension of work with ionising radiation.

22. All procedures involving the importation, transportation, custody & use of radionuclides & the disposal of associated waste are licensed by the Radiological Protection Institute of Ireland & these procedures are subject to their inspection. Licence applications are made by the Departmental Radiological Protection Supervisor, through the College Radiological Protection Officer, who submits them to the College Radiological Safety Committee and the Radiological Protection Institute of Ireland for approval. The RPII rigorously any areas of non-compliance with licence conditions they have the power to revoke or suspend the College licence.

Appendix VII

Trinity College Dublin Biological Hazards
(Revised Policy Document -April 1999)

Policy- Any individual proposing to undertake work (research or teaching) involving potential exposure to a biologically hazardous material, must comply with the guidelines outlined below, and the provisions of relevant legislation. (Biologically Hazardous Materials include, micro-organisms- natural or genetically modified, cell cultures, human endoparasites, human or animal tissues, fluids, preparations and derivatives, which may be able to cause any infection, allergy, or toxicity.) It is the responsibility of each relevant head of department, or unit director, to ensure that all staff members, researchers and students as may be relevant, are provided with a copy of this policy and are aware of its contents.

Implementation of Policy-

1. Hazard Identification & Risk Assessment.

STEP 1: Notification of intention to work with biologically hazardous materials, ie. Project Registration. Any individual proposing to undertake work involving potential exposure to a biologically hazardous material, must, as a preliminary step, complete a questionnaire (Biohazards 1). This questionnaire is available from your Departmental Safety Officer, the College Safety Officer, or the College Biohazards Officer. This questionnaire needs to be completed by the principal investigator / project supervisor at the planning stage of a research project or new venture, well in advance of any proposed work with biologically hazardous materials, and before research grants are applied for, where relevant. An overview of the project in question including an outline of facilities, safety provisions and cost details will be included in the questionnaire.

STEP 2: Personnel Registration:

On approval of this questionnaire by the college biohazards officer, all personnel involved in the project will be required to complete a more detailed questionnaire (Biohazards 2). This questionnaire will include an outline of the methodology and procedures involved and the measures to be taken to prevent exposure to any biologically hazardous material. In completing this questionnaire, one must include, in particular, details of the identity / nature of the biologically hazardous material, and potential risk to health, working procedures and methods, the protective and preventive measures that are envisaged, and waste disposal arrangements.

This questionnaire must be completed by the researcher and signed by the principal investigator or course supervisor, countersigned by the head of department / departmental safety officer, and forwarded to the College Biohazard Officer for approval, together with a copy of any grant application, where relevant.

On receipt of this questionnaire, the College Biohazard Officer will advise on the appropriateness of facilities, the adequacy of containment measures, adequacy of storage, disposal and sterilisation facilities, the competence of the principal investigator and other personnel, the isolation of work from uninvolved personnel (including control of visitor access) and any additional precautions which may need to be taken. The College Biohazard Officer may then:

(a) Grant permission for the work to be undertaken,

(b) Grant permission for the work to be undertaken, providing certain conditions are complied with,

or

(c) Reject the application to undertake work involving potential exposure to biological hazards.

In approving research work to be undertaken, the College Biohazard Officer will take into consideration 'the hierarchy of risk control' and recognised safety management principles of prevention.

The College Biohazard Officer must be notified in writing, of any significant changes in procedures, facilities, materials etc. which may impact on the risk associated with the work. The College Biohazard Officer must approve such changes before same are implemented.

N.B. Biohazard work must only be undertaken with the prior written approval of the College Biohazard Officer. The Science Faculty does not ordinarily permit undergraduate students to work with biologically hazardous material (for reasons of competency and difficulty posed by period needed to establish efficacy of any vaccination)

2. Training and Instruction.

Any individual proposing to undertake work involving potential exposure to a biologically hazardous material, must satisfy their departmental safety officer, in consultation with the College Biohazard Officer as necessary, as to their competency to undertake such work. In particular such individuals must have an adequate knowledge of the potential hazards, containment measures, and the appropriate decontamination and emergency procedures. Accordingly, it is imperative that any such individual must as a minimum requirement, attend a Biological Safety Workshop, which will be organised in college. Those individuals who can demonstrate competence may only need to attend part of this safety workshop. It may also be necessary for the individual involved to gain practical experience, before being considered competent to work with biologically hazardous materials, (this will be decided by the departmental safety officer in consultation with the College Biohazard Officer where necessary) and in this case, adequate supervision must be provided while this practical experience is being attained.

3. Record Keeping.

Any individual undertaking work involving potential exposure to biological hazards, must keep pro er I p records in the laboratory of the receipt, storage, and disposal of potentially infectious materials. The exact form of these records must be agreed between the individual, the departmental safety officer and the College Biohazard Officer, and may be subject to periodic inspection by departmental safety officer or the College Biohazard Officer.

The College Biohazard Officer will keep a register of all individuals undertaking work, which may involve exposure to biological hazards. The College Biohazard Officer will ensure that the occupational health physician also has access to this information, and is regularly updated. The Health and Safety Authority will have access to this information also, in accordance with the Biological Agents Regulations 1994, as amended 1998.

A copy of the risk assessment as outlined above will be kept by the College Biohazard Officer, and will be available for inspection by the Health and Safety Authority, in accordance with the Biological Agents Regulations 1994, as amended 1998.

4. Health Surveillance.

The College Occupational Health Physician will provide health surveillance as deemed necessary and appropriate, and will offer immunisation where applicable. Where immunisation is required, this will be

paid for by the department or principal investigator in question (grant applications may need to specify this expense). Those receiving immunisation will be informed of the benefits and drawbacks of both immunisation and non-immunisation, and any offer of immunisation, which is refused, must be in writing. The Occupational Health Physician will keep records of any such health surveillance, in accordance with the requirements of the Biological Agents Regulations 1994, as amended 1998. The immune status of such individuals may have to be assessed before permission can be given for work to proceed, and it should be noted that at least six months may elapse before this can be determined in many cases.

Any individual working with biologically hazardous materials who becomes pregnant or immuno-compromised must immediately advise their departmental safety officer, so that a further risk assessment can be undertaken.

5. Accident Procedures.

It is the legal responsibility of any individual working with biologically hazardous materials to immediately report to the departmental safety officer, any accident or incident of which he/she becomes aware, involving the exposure to or release of a biologically hazardous material, likely to involve a risk to the health and safety of employees.
All accidents / incidents (even those which don't involve exposure to a biological hazard) must be reported in accordance with college policy and the appropriate forms must be completed.

Administration and enforcement of Policy:

There are medical, legal and insurance implications for college in permitting work with biologically hazardous materials.
It is the responsibility of the head of department, in consultation with the departmental safety officer and the College Biohazard Officer to ensure that this policy is complied with. Individuals Who do not comply with the provisions outlined in this policy will initially be warned. Second offences, or serious breaches of college policy or legislative requirements, will be reported to the College Biohazard Officer by the departmental safety officer, and this may lead to a withdrawal of approval for the continuance of the research in question. College disciplinary procedures may also be invoked. In the event of a dispute between an individual undertaking work with biologically hazardous materials, and the college biohazard officer, the individual may appeal to the College Safety Committee. Thereafter, the normal statutory procedures for appeal will operate.

Compliance with this policy does not exempt any individual from complying with general college safety regulations, the college safety statement, national and international regulations and applying common sense measures to ensure the safe operation of the research laboratory.
The College Biohazard Officer is: **Dr. Fred Falkiner**, Microbiology Laboratory, Dept. of Laboratory Medicine, The Adelaide and Meath Hospitals, Tallaght, Dublin 24. Phone: 4143920, or 6081342 or 087-2537103. E-mail: ffikiner@tcd.ie

The College Occupational Health Physician is: **Dr. Chris Dick**, College Health Service, House No. 47, College. Phone : 6081556. E-mail: dickc@tcd.ie

The College Safety Officer is: **Mr. Tom Merriman,** Director of Buildings Office, West Chapel, College. Phone: 6081914. E-mail: tom.merriman@tcd.ie

Reference Material-

Directive 90/679/EEC - Council Directive on the protection of workers from risks related to exposure to biological agents at work, as amended 1997.
Safety Health and Welfare at Work Act 1989.

Biohazards 1 – Project Registration Form

This questionnaire must be completed to comply with the provisions of;

The Safety Health & Welfare at Work (Biological Agents) Regulations 1994, as amended 1998.

&
The Trinity College Dublin – Biological Hazards – Policy Document – Revised April 1999.

This questionnaire was designed to assist in ensuring compliance with current legislative provisions and to ensure that correct procedures are followed so that accidental exposure to potentially hazardous biological materials can be prevented.
This questionnaire must be completed by all Principal Investigators / Project Supervisors intending to undertake work, which may involve exposure to materials which may be Biologically Hazardous.
Biologically Hazardous Materials include, micro-organisms- natural or genetically modified, cell cultures , human endoparasites, human or animal tissues, fluids, preparations and derivatives, which may be able to cause any infection, allergy, or toxicity.
Note: Any biological material should be treated as being potentially hazardous until proven otherwise.
As prinicpal investigator/ project manager, you are responsible for all health and safety aspects related to this project. You should consult with your departmental safety officer, who can provide assistance and advice in completing this form.

Name of Principal Investigator / Project Supervisor:

Department:……..

Telephone:…… **e-mail:**……...……

Title of this research / teaching project:

……

When is it intended to commence work with biological materials? :…….…….

Advise which biologically hazardous materials you may potentially be exposed to?
……

Source of supply of biological materials ? :……

Which hazard classification do these biological materials come under(Please refer to the 4th schedule of the Safety Health and Welfare at Work (Biological Agents) Regulations 1994, as amended 1998:

2 ☐ **3** ☐ **4*** ☐

If you are unsure, please consult with the College Biohazard Officer.

Which of the following facilities will be required to undertake the work in compliance with the 7th schedule of the B.A. Regs 1994?

		Yes	No
1	The workplace should be separated from any other activities in the same building:	☐	☐
2	Input and / or extract air to be filtered using HEPA or likewise:	☐	☐
3	Access to be restricted to nominated workers only:	☐	☐
4	Workplace to be sealable to permit disinfection:	☐	☐
5	Specified disinfection procedures required:	☐	☐
6	Workplace to be maintained at an air pressure negative to atmosphere:	☐	☐
7	Effective vector control required (rodents / insects):	☐	☐
8	Surfaces impervious to water and easy to clean:	☐	☐
9	Surfaces resistant to acids, alkalis, solvents, disinfectants:	☐	☐
10	Safe / secure storage facilities:	☐	☐
11	Observation window:	☐	☐
12	Lab to contain its own equipment:	☐	☐
13	Suitable containment such as biological safety cabinet or isolator:	☐	☐
14	Incineration service available for disposal of animal carcases:	☐	☐
15	Access to autoclave facilities for rendering waste safe:	☐	☐

*****_There are no facilities available in College for undertaking work with Category 4 Biological Agents._

Where is it intended to carry out this work ?: (In College, outside of College, which building, department, lab etc.)

……

Are the above necessary facilities available to you, and if not, what arrangements are being made by you to implement the necessary changes?.....

……

……

What Personal Protective Equipment will be necessary?:

Gloves	☐
White Coats	☐
Face Masks	☐
Goggles	☐
Visors	☐
Plastic Bibs / Aprons	☐
Overshoes	☐
Hair Caps	☐
Respirators	☐
Other (please specify)	☐

What provisions / procedures will be implemented to ensure that used protective clothing will be rendered safe? (regular autoclaving, laundering, alginate bags, disposable PPE)

Proposed Funding Agency / Source: (eg. College, HRB, Welcome, NIH, EU, Commercial Contract, Other) please specify: ……..

Have you included the following potential safety costs into the cost of the research project?

Suitable laboratory facilities:	☐
Necessary equipment, apparatus, instruments, labware:	☐
Personal Protective Equipment:	☐
Waste disposal:	☐
Training:	☐
Health surveillance / vaccinations for personnel:	☐
Suitable biological packaging for transportation:	☐
Special cleaning / decontamination agents:	☐
Other – Please specify:	☐

Waste Production, Treatment and Disposal:

What types of waste are likely to be produced? (liquid, solids, sharps, radiological, other –please specify)…….

An attempt should be made to quantify possible waste production under the headings outlined above……

How is it intended to;
Store this waste:……..

Treat this waste: ……

Dispose of this waste:……

(With regard to waste storage, treatment and disposal, you should consult with the College Hazardous Materials Technician, Mr. Noel O' Reilly at ext. 3565.)

	Yes:	**No:**
Will the work involve the need to transport biological materials ?:	☐	☐

If yes, give further details of transport involved and how safety will be ensured.
(Transport of biological materials is regulated by separate international legislation. Transport of such materials creates special hazards and suitable packaging and containment must be ensured. Please seek advice from the College Biohazard Officer)

Emergency Plan:……

……..

……...

……

Outline detailed contingency measures which will be followed in the event of an accident/emergency, (eg. accidental spillage/release, accidental inoculation, fire, cleaning & decontamination measures to be taken, measures to be taken to prevent loss of physical containment, first aid facilities & treatment available etc.) :

……..

……...

……

Is this your first time undertaking work involving a group 2, 3 or 4 Biological Agent?

Yes: ☐ **No:** ☐

(College is legally obliged to notify the Health and Safety Authority at least 30 days before the commencement of work for the first time with biological materials which are potentially hazardous)

Outline the proposed number of each category of person involved in work:

Category of Personnel	Number	Category of Personnel	Number
Undergraduate		Academic Staff	
Postgraduate,		Experimental Officers	
Postdoctoral		Technicians	
Visiting workers		Other – Please specify	

(Are these the only people who may be exposed ? Consider how you will prevent exposure to others , such as cleaning staff, service personnel etc. who may be accidentally exposed)

Please give details of how you as Principal Investigator / Project Supervisor will ensure that adequately competent individuals only are involved in undertaking the biologically hazardous work involved in this research project:

……..

……...

……

……..

……...

……

Please also outline details of your competency in relation to working with Biohazards:

……..

……...

……

Health Surveillance:

Will you undertake, as principal investigator to ensure that all of the above individuals are assessed by the Occupational Health Physician, (Ext. 1556), before the commencement of this research project, and as necessary thereafter for health surveillance and immunisation as considered necessary by the physician? **Yes:** ☐ **No:** ☐

Give a brief description of the processes involved in this research / teaching work : (Further details may be appended to this document if necessary)

……..

……...

……

Does the research / teaching work involve deliberate culturing of biologically hazardous materials? **Yes:** ☐ **No:** ☐

Does this work involve the use of animals ?: **Yes:** ☐ **No:** ☐

If Yes, has the College Bio-Resources Officer been consulted? **Yes:** ☐ **No:** ☐
(Mr. Peter Nowlan ext. 1008)

The Principal Investigator / Project Supervisor and the relevant Head of Department must sign and date the appropriate sections of the following page, and forward the completed application to the College Biohazard Officer for approval.

The information supplied by me in this questionnaire is accurate and correct to the best of my knowledge. I hereby undertake to comply with the provisions of the College Biological Hazards Policy, and all relevant safety legislation and guidance. I understand that I may not commence work with Biological Agents without the prior approval of the relevant Head of Department, Departmental Safety Officer and the College Biohazard Officer. I undertake to report all accidents/incidents to the Head of Department & College Biohazard Officer, as soon as possible after occurrence.

Signed: ……..

Principal Investigator / Project Supervisor: …… **Date:**

I hereby advise that I have no objections to this research / teaching work being undertaken provided the Biohazard 2 form is satisfactorily completed and the safety provisions outlined in both the College Biological Hazards Policy and the Safety Health and Welfare at Work (Biological Agents) Regulations 1994, as amended 1998 are complied with.

Head of Dept. in consultation with Dept. Safety Officer:…….. **Date**:…….

College Biohazard Officer:…… **Date:**……

Bio Reg. Number assigned to this application:…….

Names and Addresses of College Safety and Health Officers:

Hazardous Chemicals
Dr. M. Bridge, Chemistry Department, Chemistry Building, College. Tel.: 8961264
Bio-Hazards
Dr. Fred Falkiner, Microbiology Department, Moyne Institute, College. Tel.: 8962137
Bio-Safety and Genetic Manipulation
Dr. Ronnie Russell, Microbiology Department, Moyne Institute, College. Tel.: 8961194
Laser Safety
Dr. Vincent Weldon, Physics Dept., College. Tel: 8962168
Bio-Resources
Mr. Peter Nowlan, Bio-Resources Unit, Biochemistry Building, College. Tel.: 8961008
Radiological Protection
Dr. Elaine Doorly, Director of Buildings' Office, West Chapel, College. Tel.: 8962887
Fire Safety
Mr. Karl Flynn, Director of Buildings' Office, West Chapel, College. Tel.: 8963545
Security
Mr. Pat Morey, Chief Steward, Front Gate. Tel.: 8961144
Occupational Health Physician
External Service Provides, contact College Health Service Tel.: 8961556
Safety Planning and Environmental Compliance
Mr. Tom Merriman, Director of Buildings' Office, West Chapel, College. Tel.: 8961914

Reference Material:
Directive 90/679/EEC – Council Directive on the protection of workers from risks related to exposure to biological agents at work, as amended 1997.
Safety Health and Welfare at Work Act 1989.
Safety Health and Welfare at Work (Biological Agents) Regulations 1994, as amended.
Safety Health and Welfare at Work (Biological Agents) (Amendment) Regulations, 1998
Guidelines of the Advisory Committee on Dangerous Pathogens
Health and Safety Executive – U.K. Guidelines
Health and Safety Authority – Ireland. Guidelines

Biohazards 2 – Personnel Registration Form

This questionnaire must be completed to comply with the provisions of;
The Safety Health and Welfare at Work (Biological Agents) Regulations 1994, as amended 1998.
&
The Trinity College Dublin – Biological Hazards – Policy Document – Revised April 1999.

This questionnaire was designed to assist in ensuring compliance with current legislative provisions and to ensure that correct procedures are followed so that accidental exposure to potentially hazardous biological materials can be prevented.
This questionnaire must be completed by each individual intending to undertake work, which may involve exposure to materials which may be Biologically Hazardous, prior to the commencement of such work.
Biologically Hazardous Materials include, micro-organisms- natural or genetically modified, cell cultures , human endoparasites, human or animal tissues, fluids, preparations and derivatives, which may be able to cause any infection, allergy, or toxicity.
Note: Any biological material should be treated as being potentially hazardous until proven otherwise.
You are responsible for taking reasonable care of your own health and safety and of the health and safety of anyone who may be affected by your actions, while undertaking this proposed work with Biologically Hazardous Materials. You should consult with your departmental safety officer, who can provide assistance and advice in completing this form.

Bio Reg. Number: (from Biohazard 1 form)

Name of Principal Investigator / Supervisor:……..

Title of this research project:…….

Name of researcher:…….

Department:……..

Telephone:…… e-mail:…….

Name and Staff / Student Number:……..

Qualifications:……

Experience in Biohazard Work: …….

College Biohazard Workshop Attended: **Yes:** ☐ **No:** ☐

If the proposed Biohazard work will also involve working with other hazardous materials such as ionising radiation, please outline details of your competence in relation to such other special hazard areas.

……..

……...

……

Biological Materials to be used: ……..

……...

……

Hazard Identification / Risk Assessment associated with procedures involved in work with Biological Agents:

Please describe the general procedures which will involve Biological Materials, right through to the final step of waste disposal, and for each step assess the potential risk involved (ie. High, Medium or Low) and the control measures which will be implemented to ensure any risk is eliminated or minimised as far as possible. (Incl. detail of work procedures to be used such as homogenisation, centrifugation, column chromatography etc.)

Step No. Hazards: Risk: Controls:

……..

……...

……

……..

……...

……

Facilities:

Have the facilities required as outlined in schedule 7 of the BA Regs 1994 , as amended 1998, been provided? (Refer to Biohazard 1 Questionnaire for further details on facilities)

Yes: ☐ **No:** ☐

Waste Production, Treatment and Disposal:

Have you consulted with Noel O Reilly, the College Hazardous Materials Technician (ext.3565 in relation to the safe disposal of the waste, which you will produce?

Yes: ☐ **No:** ☐

Health Status:

I confirm that I have been assessed by the College Occupational Health Physician and that there is no medical reason why I should not undertake any work involved in this project. I undertake to advise the Principal Investigator / Supervisor if there are any changes in my medical circumstances that might warrant a re-assessment.

The above information is accurate and correct to the best of my knowledge. I hereby undertake to comply with the provisions of the College Biological Hazards Policy, and all other relevant safety legislation and guidance. I understand that I may not commence work with Biological Materials without the prior approval of the relevant Head of Department and the College Biohazard Officer. I hereby agree to further consult with the College Biohazard Officer should any significant changes occur during the course of my work, which may alter the findings of the original risk assessment undertaken.

Signed: ……..

Researcher:……. **Date**:……..

I hereby advise that I have no objections to the above research work being undertaken provided the safety provisions outlined in both the College Biological Hazards Policy and the Safety Health and Welfare at Work (Biological Agents) Regulations 1994, as amended 1998, are complied with.

Head of Dept. …… **Date:** ……
in consultation with
Dept. Safety Officer:

College Biohazard Officer:…….. **Date:**……..

I hereby advise that the above individual is fit to undertake the proposed research work.

College Occupational Health Physician:……..**Date**:……

Appendix VIII. PROJECT DESCRIPTION FORM

PROJECTS USING BIOLOGICAL MATERIALS

Three completed copies of this form should be submitted: all must be signed by the Bio Hazards Safety Officer (BHSA). One will be submitted by BHSA to the College Biohazard Officer, two will be returned, 1 to be kept by the project leader & 1 to be given to the technician responsible before work starts;

N.B. By signing this form you indicate you are aware of the proper procedures used in the handling of biological materials in the Dept & that you are competent to carry out these procedures. If in doubt, contact the Departmental Bio-Safety Officers.

Project Title: …….

Brief description of Project work:

……..

……...

Biological material involved (indicate whether Class A, B or C):

……..

……...

Source of material:……..……..

……...

Start Date:…… & **Expected Completion Date**:…….

(**N.B**. Biological material will be disposed of on this date unless it is extended by the supervisor):

Preparation equipment to be used: ……..

……...

Testing equipment to be used: ……..

……...

Project Leader

NAME: ……**SIGNATURE**: ……**DATE**:…….

Other Personnel: **NAME:** ……. **NAME:** …….

NAME: ……. **NAME:** …….

I grant / do not grant approval for the commencement of this project:

Departmental Bio-Safety Officer: Signature;…….. **Date:**……

Appendix VIX:
DISPLAY SCREEN EQUIPMENT RISK ASSESSMENT FORM

Under the Safety Health and Welfare at Work Act (General Application) Regulations, 1993, all hazards associated with the use of display screen equipment (VDUs) must be identified, and any risk to the health and /or safety of the user must be assessed.

To ensure compliance with this legislation, the following checklist must be completed for all VDU workstations in your department.

1. Display Screen

		Yes	*No*
(a)	Are the Display Characters easy to read?	☐	☐
(b)	Are the Display Characters of adequate size?	☐	☐
(c)	Is the image stable and free from flickering?	☐	☐
(d)	Are there controls for brightness and contrast?	☐	☐
(e)	Can the screen be tilted and swivelled easily?	☐	☐
(f)	Is it possible / necessary to adjust the height of the screen?	☐	☐
(g)	Is the screen free from uncomfortable glare and reflection?	☐	☐

2. Keyboard

		Yes	No
(a)	Is there enough space in front of the keyboard for one to rest the wrists and arms?	☐	☐
(b)	Is the layout of the keyboard easy to use?	☐	☐
(c)	Are the keyboard symbols easy to read?	☐	☐
(d)	Is the keyboard non-reflective?	☐	☐
(e)	Is the keyboard detachable?	☐	☐

3. Work Desk

		Yes	No
(a)	Does the surface have low reflection?	☐	☐
(b)	Is it large enough for all equipment?	☐	☐
(c)	If a document holder is provided, is it stable, adjustable, and at the same level as the display screen?	☐	☐
(d)	Is work positioned to lessen head /eye movements.	☐	☐
(e)	Is there enough space for employees to find a comfortable position?	☐	☐
(f)	Are any electrical cables / equipment in good condition?	☐	☐
(g)	Are cables tidy and prevented from trailing?	☐	☐
(h)	Is adequate storage space for documentation etc. provided in/on the desk	☐	☐

4. Work Chair

		Yes	No
(a)	Is the work chair stable?	☐	☐
(b)	Does the chair allow operator easy freedom of movement?	☐	☐
(c)	Is the seat height of the chair adjustable?	☐	☐
(d)	Is the backrest of the chair adjustable in height and tilt?	☐	☐
(e)	Can the angle of tilt of the backrest be locked into a suitable position?	☐	☐
(f)	Is the user aware of how to adjust the chair properly in order to find the best sitting posture?	☐	☐
(g)	Can the user place both feet flat on the floor?	☐	☐
	If not - Is there a stable footrest available for use?	☐	☐

5. Work Environment

		Yes	No
(a)	Is there enough space for user to change position & vary movement?	☐	☐
(b)	Is lighting adequate for the task with no extremely light or dark areas?	☐	☐
(c)	Can the workstation be adjusted to avoid glare and reflections?	☐	☐
(d)	Do windows have adjustable blinds or other suitable adjustable coverings?	☐	☐
(e)	Is the VDU positioned so that neither the screen nor the operator are facing a window?	☐	☐
(f)	Is the working area free from excessive noise from equipment?	☐	☐
(g)	Is the room temperature comfortable?	☐	☐
(h)	Is the humidity level comfortable?	☐	☐
(i)	Is the ventilation adequate?	☐	☐

6. Operator / Computer Interface

	Yes	**No**
Does the operator find the software easy to use and non stressful?	☐	☐

7. General

			Yes	**No**
(a)	Has an eye & eyesight test been made available to the user?	☐	☐	
(b)	Has the user had an eye and eyesight test in connection with the use of VDU's?		☐	☐
(c)	Has a system of permitted breaks been set up?		☐	☐
(d)	Is the user free from fatigue or stress?		☐	☐
(e)	Is the user free from aches, pains, pins and needles etc. in the neck, back, shoulders or upper arms?		☐	☐
(f)	Is the user free from restricted joint movement?		☐	☐
(g)	Is the user free from problems with vision – headaches, sore eyes, problems with focusing etc.?		☐	☐

Overall Assessment

What, if any remedial action is required?

_____

_____

Please notify the responsible person for implementation , ie. Head of Discipline.

Assessor's Signature: **VDU operator's signature:**

Department: _____

Date of Assessment:_____ **Location:** _____

A copy of this completed Risk Assessment Checklist should be kept with the relevant Departmental Safety Statement.

Appendix VX.

BASIC HEALTH ASSESSMENT FOR FIELD OR LABORATORY WORK
DECLARATION B

In a very small number of cases, the ability of an individual to undertake field or laboratory work may be compromised by pregnancy or an existing medical condition. In such cases, specific control measures such as enhanced supervision may have to be introduced to allow the person to perform the work safely. In order to assess these needs, and to ensure the College fulfils its legal Health and Safety obligations, it is necessary to ascertain any conditions which may seriously affect any individual during field- or laboratory-work.

You are, therefore, asked to look at the attached questionnaire (next page). ***If you respond with a yes to any of the conditions, you are asked to contact the Physician in the Medical Centre (House No. 4 7, Tel. 608 1556). The doctor will advise you if any precautions are necessary for the type of work you are to*** undertake.

The doctor is bound by his/her professional code of conduct which precludes him/her from divulging any personal details. Hence, all information will be treated in strict confidence.

I have read the attached health questionnaire and would confirm the following: ……

……

……

……..

Name ..... (BLOCK CAPS);

Faculty: …….....

Signed: ..... Student/Staff ID: .....

Dated: .....

THIS DECLARATION SHOULD BE SIGNED AND HANDED BACK TO THE DEPARTMENTAL SAFETY OFFICER.
INFORMATION GIVEN IN THE QUESTIONNAIRE ON THE FOLLOWING PAGE SHOULD ONLY BE GIVEN TO THE STUDENT HEALTH OFFICE.

IF YOUR HEALTH STATUS CHANGES (PREGNANCY INCLUDED) AT ANY STAGE DURING YOUR PERIOD IN COLLEGE THEN SEEK FURTHER ADVICE; INITIALLY FROM THE STUDENT HEALTH OFFICE.

CONFIDENTIAL HEALTH QUESTIONNAIRE

NAME: ..... Date of Birth: .....

Male / Female . Next of Kin: .....

Contact number: ……..... Address .....

Do you suffer, or have you suffered in the past, from any of the following?

MEDICAL CONDITION	YES/NO	DETAILS
Asthma bronchitis or other lung problem		
Heart disease		
Fits or fainting episodes?		
Mental illness or depression		
Rheumatic fever		
Rheumatism or arthritis		
Stomach or duodenal ulcers		
Liver disease		
Kidney disease or urinary infections		
Diabetes		
Back trouble		
Skin disease		
Blood disorders		
Recurrent headaches or migraine		
Allergies		
Vision defects (other than correctable by lenses)		
Ear problems or hearing difficulties		
Injury from past accidents		
Major surgical operations		
Do you suffer from any other disabilities?		
Are you taking any prescribed medication? (other than contraceptive pill)		
Are you taking other substances or drugs		
Are you a smoker? 1-10; 11-20; 20+/day		
WOMEN Are you pregnant? Lactating?		
Any other gynaecological issues?		

IF YOU ANSWER YES TO ANY ONE OF THESE QUESTIONS, OR IF YOUR HEALTH STATUS CHANGES UNDER ANY OF THESE HEADINGS DURING YOUR PERIOD IN COLLEGE, THEN YOU MUST CONSULT WITH THE OCCUPATIONAL HEALTH PHYSICIAN.

NOTE: YOU **DO NOT** RETURN THIS QUESTIONNAIRE TO THE DEPT SAFETY OFFICER.
IT IS ONLY TO BE GIVEN TO THE OCCUPATIONAL HEALTH PHYSICIAN.
STRICT MEDICAL CONFIDENTIALITY PROTECTS THIS INFORMATION.

NAME & ADDRESS OF YOUR GP WHO MAY BE CONTACTED BY OCCUPATIONAL HEALTH PHYSICIAN.

NAME: ……..

ADDRESS: ……..

SUMMER/OCCASIONAL STUDENTS

Name:…….. (USE BLOCK CAPITALS)

Contact Details

Home address	**Irish address (if different)**
……	……
……	……
……	……
……	……
……	……
Tel #:…….	**Tel #:**…….

E-mail address ……..

Project supervisor: ……

SAFETY AGREEMENT

(2) I have read and understand the Departmental Safety Manual.

(3) I understand that in the Laboratories or workshops, I am to assist staff and Postgraduate research students, working only under their direct supervision.

(4) I understand that I am not permitted in the Mechanical & Manufacturing Engineering Buildings or laboratories outside working hours (9am-5pm Monday to Friday).

Signed: …… **Dated:** ……

Department of Mechanical & Manufacturing Engineering
Trinity College Dublin

This form must be completed by all staff & postgraduate students

I ……..Print Name here…… have read and understood the Safety Statement issued by the Department of Mechanical & Manufacturing Engineering Department. I agree to be bound by the rules for the maintenance of a safe working environment within the Department.

Signed:…… **Date** .....

N.B.

THE FORM MUST BE COMPLETED & RETURNED TO THE DEPT SAFETY OFFICER.

Appendix VXI- IDENTIFIED HAZARDS

Location	Hazard	Risk Assessment	Control Measures	Person Responsible
Parsons Building & Podium			The Head of Department has overall responsibility for Health and Safety within his area as stated in the College Safety Statement. Day to day duties may be delegated to other individuals as listed in this document.	Head of Department
	Lack of safety management	High	The Head of Department is responsible for appointing a workshop safety officer and fire warden. The Chief Technician has been duly appointed as fire warden and Workshop Safety Officer	Head of Department
			The Head of Department is to appoint a deputy to act in the Chief Technician's absence, to ensure the continuance of all relevant Health and Safety control measures. Mr Sean Doonan has been duly appointed.	Head of Department
			The Head of Department is to appoint a Departmental Safety Officer and that person so named in the table on page *i* of this document is duly appointed. S/He will also deputize in the Head of Department's absence.	Head of Department
			The Head of Department is to periodically review and monitor the Departmental safety statement. The Head of Department is to carry out a risk assessment of all technical functions carried out in the Department.	Head of Department
			A copy of this document to be given to each member of staff.	Head of Department
			All accidents and dangerous occurrences are to be reported to the Departmental Safety Officer, who will report to the Head of Department. These occurrences will be forwarded to the College Safety Officer.	Head of Department
			As a preventative welfare measure, all staff are encouraged to attend a basic fire training session and the Occupational Health Clinic at the Student Health Centre.	Head of Department
			The Departmental and Workshop Safety Officer and deputy are to inform the Head of Department of any problems implementing their respective Health and Safety duties.	Chief Technician, Dept Safety Officer

Location	Hazard	Risk Assessment	Control Measures	Person Responsible
	Fire	High	The Workshop safety officer is to carry out a weekly check of the workshop area to ensure escape routes are; not obstructed, may be opened from the inside in the direction of escape and free from combustible materials.	Chief Technician
Workshop			The Workshop safety officer is to visually check on a weekly basis all relevant fire extinguishers, fire panels and that break glass unit keys and machinery guards are in place. Any defects or faults found are to be rectified as soon as possible.	Chief Technician
			During fire alarm activations the Fire Warden and Workshop safety officer are to assist in evacuation as far as possible and without putting themselves in any danger. The Head is to deputize for the safety officers listed during their absences.	Dept Safety Officer & Chief Technician
Workshop	Rotating Machinery and power tools	High	No member of staff or student may use workshop equipment without satisfying the Workshop Safety Officer of their competence. All those using such equipment must obey the prescriptions of the Department's Workshop Safety Manual.	Chief Technician,
Workshop	Rotating Machinery and power tools	High	There must be at least two persons present in the Workshop at all times when machinery is in use	Workshop users
			The Workshop safety officer is to periodically ensure that all workshop offices and store rooms are, as far as possible, kept in a tidy manner, free of excess combustible items, and that fire doors are not left constantly wedged open.	Chief Technician
			Staff are reminded that fire exits, corridors access & egress routes are not to be obstructed by equipment, materials, or tools.	Building Users
			Staff are reminded that the assembly point in the event of an evacuation is the "**Flat Iron"**, the triangular lawn next to the Rugby pitch.	Head of Department
			On hearing the fire alarm (a continuous ringing bell) staff are instructed to; **1**- Leave the building with any visitors you are responsible for. **2-** Go to the assembly point. **3**- Re-enter only when the alarm is turned off.	Building Users
			On discovery of a fire staff are instructed to: **1**- Raise the fire alarm. **2**- Leave the building with any visitors you are responsible for. **3**- Inform security centre on ext. 1999. **4**- Go to the assembly point. **5**- Re-enter only when the alarm is turned off.	Building Users

Location	Hazard	Risk Assessment	Control Measures	Person Responsible
			No alterations or repairs to any electrical items fixtures or fittings. The Buildings Office technical staff, qualified electricians or appointed contractors only are to carry out any alterations or repairs.	Building Users
	Fire & electrical shock	High	All electrical items are to be periodically inspected as far as possible for any signs of damage or wear to cords flexes cables mouldings etc. Any defects are to be reported to the Buildings Office.	Building Users
			The use of extension leads, adaptors is to be minimized as far as possible. Electrical sockets are not to be overloaded.	Building Users
			All second hand electrical items introduced into the Department are to be tested for electrical integrity by the user prior to use.	Dept Electronics Technician
			Open bar electrical fires are not to be used.	Building Users
			All electrical items to be turned off last thing at night, as far as possible.	Building Users
	Fire & passive smoking	High	Smoking is prohibited in the building except in designated areas in accordance with College policy.	Head of Department
	Arson & bomb threats	High	All staff to report suspicious packages or persons to the security centre ext. 1999 as soon as possible.	Building Users
			All staff are requested to challenge as far as is reasonably practical , any person unknown to staff or not in building on official business.	Building Users
			All staff to keep their offices locked when not in use. Laboratory heads and Workshop safety officer are to ensure their work areas are adequately secured and locked.	Head of Department

Location	Hazard	Risk Assessment	Control Measures	Person Responsible
	Slips trips & falls	Medium	Trailing cables are not to be left in any circulation routes as far as possible. Cables in circulation routes must be kept as short as possible and covered with a cable guard mat.	Building Users
			All plant and equipment is to be arranged so that safe access egress and clear circulation routes are provided.	Head of Department
			All items of disrepair to fixtures, fittings, flooring, stairs or fabric of the building are to be reported to the Head of Department for repair as soon as possible.	Building Users
	Lack of First Aid personnel & facilities	High	Trained first aid personnel are given on page ***i***. After hours contact ext 1999.	Head of Department
			That first aid cabinets are kept fully stocked.	Chief Technician
	Work environment	High	Adequate lighting must be present to allow the function to be carried out safely. The site must be clear, tidy, safe underfoot, free from electrical or chemical hazards as far as possible.	Head of Department
	Work environment	High	All problems in implementing safe work practices are to be reported as soon as possible to the Chief Technician.	Head of Department
	Plant equipment & machinery	High	No alterations to, interference with, or use of any plant, equipment, or machinery unless authorized and suitably trained to do so.	Building Users
	Use of Chemicals	High	Staff and students are not to interfere with chemicals used by housekeeping staff.	Building Users

Location	Hazard	Risk Assessment	Control Measures	Person Responsible
	Use of Chemicals	High	Instructions supplied with all chemicals used during work are to be followed at all times. All chemicals used by the Department will be subject to a risk assessment.	All Staff
Metals Preparation	Use of Chemicals	High	All those using chemicals in this laboratory must ask the Chemical Hazards EO for the appropriate safety data sheets and to adhere to their prescriptions. The Laboratory is to be left clean and tidy at all times, with chemicals correctly stored.	Chemical Hazard EO, Laboratory Users
	Inventory of Chemicals	High	An inventory of all chemicals & quantities (including paints) to be compiled.	Chemical Hazard EO
	Waste disposal of Chemicals	High	All chemicals including waste oils are to be disposed of via the Chemical waste disposal system operated by the Chemistry Department. The Chemical Hazard EO will arrange their transfer to the Chemistry Dept.	Head of Dept, Chemical Hazard EO
	Incorrect lifting & handling	High	All technical staff as far as possible to be trained in manual handling techniques by the College Safety Officer.	Head of Department
	Visitors to the building	Low	All visitors who are present in the building for more than a brief period, are to the responsibility of the host. The hosts to take charge of the visitor(s) in the event of an evacuation or if any specific procedures apply.	The Host
	Changes in office practice	High	Any substantial changes involving the introduction of potentially hazardous materials, equipment or situations must be 'risk assessed' & control measures adopted prior to use. The College Safety Officer will advise on assessments.	Head of Department & Dept Safety Officer
	Workshop personal protective	High	All personal protective equipment is provided and is required to be worn at all necessary times. Staff are reminded to follow instructions on correct use at all times and to report any defects or missing items.	Head of Department & Chief Technician
	Workshop personal protective	High	All workshop users to wear safety shoes. All impact grinding and welding work to be accompanied by the use of safety goggles.	Head of Department & Chief Technician
	Workshop	High	All fixed electrical machinery to be provided with a labelled isolator.	Head of Department & Chief Technician

Location	Hazard	Risk Assessment	Control Measures	Person Responsible
	Workshop	High	All guards to be in place prior to use. Push sticks to be used at the band saw	Head of Department & Chief Technician
	Late night working	High	Staff to have access to a telephone or radio in the event of an emergency.	Head of Department
	Overcrowding	Medium	The workshop cannot be used by more than 25 persons at once.	Chief Technician
	Lack of consultation	High	Regular Faculty Safety meetings are to be held to review this document and safe systems of work used.	Dept Safety Officer
	Statutory Engineering Inspections	High	The Head of Department to implement these as necessary.	Head of Department &
	Portable Electrical equipment	High	Only110V equipment to be used or otherwise protected by a 30mA ECLB or RCD.	Chief Technician
	Welding	High	To be carried out in the open air or well ventilated areas only. Cylinders are to be stored in fire proof external area.	Chief Technician
	House keeping	High	All workshops, boiler rooms, store rooms, material and equipment stores are to be kept clean tidy and free of excess combustible materials. Section heads to review & inspect. Inaccessible areas given special attention.	Head of Department & Chief Technician
	Work related upper limb disorder &...	Medium	All VDU work stations are to have a suitable fully adjustable chair for any user. The College Safety Officer will define a "user", assess suitability and adjust the chair as necessary.	Head of Department
	RSI...repetitive strain injury		The VDU to be positioned in accordance with good ergonomic principles. The College Safety Officer will advise as necessary	VDU Users

Location	Hazard	Risk Assessment	Control Measures	Person Responsible
	Eye strain	Low	Anti glare screens to be removed in favour of arranging screens away from window reflections and direct light. The College Safety Officer will advise as necessary. All VDU users are encouraged to attend the Occupational Health Clinic for an eye test.	VDU Users
	Ventilation for equipment	Low	Photocopiers and printers should be located as close to sources of ventilation (eg windows) as far as possible. This does not apply if the area is supplied with mechanical ventilation	Chief Technician
	Overcrowding	Medium	Purpose built lecture theatres become overcrowded when the number of students present exceeds the number of seats. This should be avoided as far as possible. In multi purpose rooms the number of desks available will limit the number within.	Head of Department
Fluids Laboratory	Laboratory noise	High	Ear defenders to be worn at all times whilst operating wind tunnels.	Head of Department
Fluids Lab. Vibrations Lab.	Laser anemometer Laser vibrometer	High	This equipment is only to be used by authorized personnel who must adhere to the College's code of practice for this equipment	Head of Department
	Lack of supervision for students	High	Students to be supervised at all times by staff or use a supervised building. When students are granted leisure or study facilities within an unsupervised building the College Safety Officer is to assess suitability.	Head of Department
	Changes in office practice	High	Any substantial changes involving the introduction of potentially hazardous materials, equipment or situations is to be risk assessed & control measures adopted prior to use. The College Safety Officer will advise as to risk assessments.	Head of Department
	Laboratory Exercises	Medium	All students must familiarize themselves with the Department's Electrical equipment Safety Guide before conducting experiments. They must follow the guidance of the demonstrator at all times and only operate equipment in his/her presence.	Head of Department
	Laboratory Exercises	Medium	All demonstrators to be trained in Fire Safety	Head of Department
	Engine test cells (Fire & toxic gases)	High	Staff & students working on Engine test cells must be familiar with, & adhere to the safety instructions for the use of this equipment, which are to be displayed prominently in the area. Lone working of students is not permitted.	Technician Thermo Labs

Location	Hazard	Risk Assessment	Control Measures	Person Responsible
	Mechanical testing equipment	Medium	Staff and students may not use this equipment unless they have satisfied Mr Peter O'Reilly of their competence. Lone working is not permitted.	Chemical Hazards EO
	Laser welder	High	This equipment is only to be used by authorized personnel who must adhere to the College's code of practice for this equipment	Head of Department
	New practices	High	All new practices functions or equipment to be risk assessed prior to implementation	Head of Department
Parsons Building & Podium	Biological Materials	High	The Head of Department is to appoint a departmental Bio Safety Officer and that person so named in the table on page *i* of this document has been duly appointed.	Head of Department
Workshop	Biological Materials	High	All persons handling biological materials must register with the Department & College according to procedures administered by the Departmental Bio Safety Officer. Biological materials will be handled & disposed of as specified in the Departmental Safety Statement.	Bio Safety Officer
	Biological Materials	High	All persons handling biological materials must register with the Department & College according to procedures administered by the Dept Safety Officer. Biological materials will be handled & disposed of as specified in the Departmental Safety Statement.	Bio Safety Officer