

# **School of Physical Sciences**

## **Safety Statement**

**Version 2.4**

**February 2018**

# School of Physical Sciences

## Safety Statement

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## **1.0 Introduction**

- 1.1 The purpose of the Safety, Health and Welfare at Work Act 2005, is to ensure the safety, health and welfare of all employees in the workplace. The Act applies to employees in all types of work and embraces all the activities of Dublin City University (DCU).
- 1.2 In compliance with the Act, the University has prepared a written Framework Safety Statement describing the employer arrangements and the employee co-operation necessary to achieve this purpose. In addition the Framework Safety Statement outlines the University's policies on occupational health and safety matters and defining the necessary management structure for the implementation of these policies.  
Specific health and safety issues of relevance to the University as a whole are detailed in this framework safety statement.
- 1.3 In compliance with the DCU Framework Safety Statement, the School of Physical Sciences has prepared its own local safety statement, documenting our own specific hazards, risks, risk control measures and arrangements and resources for ensuring a safe and healthy work environment.
- 1.4 This Safety Statement is aimed at protecting employees, students and visitors from workplace accidents and ill health at work
- 1.5 This Safety Statement will be updated as necessary in light of new legislation, staff feedback, university structural changes and practical experience. In addition, the Safety Statement will be periodically reviewed.
- 1.6 This Safety Statement is available to DCU Management and to all employees, visitors and students of the School of Physical Sciences. It is posted on the Safety Notice Board outside school mailroom and is available on the School of Physical Sciences WEB site: <http://www.dcu.ie/physics/index.shtml>

## **2.0 Statement of Safety, Health & Welfare at Work Policy**

- 2.1 The policy of the School of Physical Sciences is, in so far as is reasonably practicable, to ensure the safety, health and welfare at work of all our employees and further, to ensure that persons not in our employment, who may be affected by the work activities, are not thereby exposed to unacceptable risks to their safety and health.
- 2.2 The School of Physical Sciences will provide the necessary resources, structures and procedures required to safeguard them against the risks arising from activities in the workplace.
- 2.3 It is the strict duty of all employees to conform to university safety policies and practices and to carry out their responsibilities as detailed in this document and in accordance with any other relevant legislation. Staff members with specific responsibilities for safety, health and welfare must properly delegate these in their absence.

- 2.4 In addition to reviewing this Safety Statement, each employee is expected to make himself/herself familiar with the DCU Framework Safety Statement. The Framework Safety Statement is available on the DCU Website.
- 2.5 Employees who fail to cooperate with safety procedures will be given a verbal warning by their supervisor. Employees who continue to be noncompliant may be subject to the normal DCU disciplinary procedures.
- 2.6 The School of Physical Sciences welcomes feedback on any aspect of this document or any other health and safety concerns. Feedback in this regard should be directed to the School Safety Advisor and to the Department Safety Committee.

***Signed .....***

***Date.....***

***Prof. Enda McGlynn  
Head of School of Physical Sciences***

### 3.0 Scope of Safety Statement

This safety statement deals in the main with the health and safety issues that fall within the remit of the School of Physical Sciences.

Our staff offices and operations are located in the following buildings;

- **Block II** also known as the ‘N’ Building
- Some offices and research laboratories are also located in the **Research & Engineering** building also known as the ‘S’ building

The scope of our operations includes:

- Basic & Applied Research
- Classroom based teaching at primary / secondary / under graduate / postgraduate level
- Laboratory based teaching at primary / secondary / undergraduate & postgraduate level

### 4.0 Health and Safety Management Structure and Responsibilities

4.1 In accordance with the DCU Framework Safety Statement, **the Head of School** as part of his/her management function, is responsible for ensuring, so far as is reasonably practical, the health and safety of persons working, studying or visiting the School of Physical Sciences. In particular he/she is responsible for the following:

1. To ensure that we have prepared a Safety Statement relevant to our operations which complies with Section 13 of the Safety, Health and Welfare at Work Act.
2. To ensure that all hazards are identified and risks controlled.
3. To ensure that periodic safety inspections/audits are carried out to monitor compliance with the Safety Statement and legal requirements
4. To ensure that all accidents to staff/students are investigated and that the DCU Injury/Incident Report forms as appropriate are completed.
5. To ensure that the DCU Evacuation and First Aid Procedures are implemented and that sufficient Fire Wardens/First Aid personnel are available.
6. To ensure that staff are appropriately trained to carry out their duties safely and to ensure the attendance of staff at designated training courses as appropriate.
7. Based on risk assessment, to arrange for the provision of adequate and appropriate personal protective equipment for employees
8. To ensure that students are adequately supervised in carrying out practical and experimental work. [Adequate level of supervision to be determined having regard to the age, level of experience and status {graduate/post graduate etc.} of the student]

- 4.2 A School Safety Committee has been set up and **Mr. Alan Hughes, Chief Technical Officer**, has been appointed as **School Safety Advisor** to assist in the design and implementation of the school safety policies while Dr. Jean-Paul Mosnier oversees Laser Safety.

Appendix 1 details the Safety Management Structure in place within the School.

#### 4.3 **Health and Safety Consultation on Campus**

In order to ensure effective consultation with staff and other campus users, DCU Executive has established a Health and Safety Consultation group to provide a formal structure for the highlighting and resolution of more difficult Health and Safety problems/issues that cannot be resolved locally. The School of Physical Sciences will be represented on this Group by **Science Faculty Safety Committee representative (s)**

Health and Safety issues that are not resolvable through internal channels can be referred through these representative(s) to the Health & Safety Consultation Group and ultimately the H&S Steering Group. **Mr Damien McGuirke** is the current Science Faculty Representative on the H&S Consultation Group, and **Mick Burke** and **Amanda Kavanagh** are the current Safety Representative on the H&S Steering Group, and can be consulted by individual staff members with a view to raising specific Health & Safety issues for resolution.

#### 4.4 **Employee Co-Operation**

Section 13 of the Safety, Health and Welfare at Work Act 2005 imposes a number of obligations on employees while at work:

- [1] An employee shall, while at work
- a) *Comply with the relevant statutory provisions, as appropriate, and take reasonable care to protect his or her safety, health and welfare and the safety, health and welfare of any other person who may be affected by the employee's acts or omissions at work,*
  - b) *Ensure that (s)he is not under the influence of an intoxicant to the extent that (s)he is in such a state as to endanger his or her own safety, health or welfare at work or that of any other person,*
  - c) *If reasonably required by his or her employer, to submit to any appropriate, reasonable and proportionate tests for intoxicants by, or under the supervision of, a registered medical practitioner who is a competent person, as may be prescribed,*
  - d) *co-operate with his or her employer or any other person so far as is necessary to enable his or her employer or the other person to comply with the relevant statutory provision, as appropriate,*
  - e) *not engage in improper conduct or other behavior that is likely to endanger his or her own safety, health and welfare at work or that of any other person,*
  - f) *attend such training and, as appropriate, undergo such assessment as may reasonably be required by his or her employer or as may be prescribed relating to safety, health and welfare at work or relating to the work carried out by the employee,*

- g) *having regard to his or her training and the instructions given by his or her employer, make correct use of any article or substance provided for use by the employee at work or for the protection of his or her safety, health and welfare to work, including protective clothing or equipment,*
- h) *report to his or her employer or to any other appropriate person, as soon as practicable-*
  - i.) *any work being carried on, or likely to be carried on, in a manner which may endanger the safety, health and welfare at work of the employee or that of any other person,*
  - ii.) *any defect in the place of work, the system of work, any article or substance which might endanger the safety, health or welfare at work of the employee or that of any other person, or*
  - iii.) *any contravention of the relevant statutory provisions which may endanger the safety, health and welfare at work of the employee or that of any other person, of which (s)he is aware.*

[2] *An employee shall not, on entering into a contract of employment, misrepresent himself or herself to an employer with regard to the level of training as may be prescribed under subsection (1)(f)*

As well as these general duties, it is important that employees are aware of the health and safety duties assigned to them in this safety statement as part of their normal duties. These delegated duties are essential for the day-to-day implementation of safety measures, and employees are obliged to carry out these functions in accordance with Section 13(1)(d) of the Act, as above.

Section 14 of the Act applies to all persons and requires that:

*A person shall not intentionally, recklessly or without reasonable cause—*

- (a) *interfere with, misuse or damage anything provided under the relevant statutory provisions or otherwise for securing the safety, health and welfare of persons at work, or*
- (b) *place at risk the safety, health or welfare of persons in connection with work activities.*

As explained in the HSA Guide to the Act as an example this section could

- apply to students if they behaved recklessly in a school or college laboratory
- or to persons interfering with, or removing equipment such as fire extinguishers etc. and as a consequence putting people at risk in a college laboratory.

Additionally, employees are required to immediately report to the School of Physical Sciences any accident resulting in loss or injury and any incident that could have resulted in loss or injury. The injured party is also required to co-operate with the investigation of the accident and the completion of the DCU Injury/Incident Report Form.



## **5.0 Health & Safety Resources**

- 5.1 Considerable resources are expended by School of Physical Sciences in securing the health, safety and welfare of employees in terms of personnel, time, materials, equipment and the purchase of goods and services.
- 5.2 Where additional equipment, training etc is required (whether as a result of ongoing risk assessment or legislative change), resources will be allocated on a prioritised basis to meet the identified requirements.
- 5.3 The Health and Safety Office retains a reference library of texts, literature, videos and other publications on health and safety matters. The Office also subscribes to an online database of safety legislation, codes of practice and international standards. All staff can gain access to these information resources by contacting the Health & Safety Office.

## **6.0 Health and Safety Training**

### **UNDERGRADUATE LABORATORIES**

#### **LABORATORIES**

All undergraduate experimental laboratories have been risk assessed. These risks are clearly displayed within the laboratory and in the laboratory manual. All students are required to read the Safety Statement at the beginning of the laboratory manual and to sign a declaration that they have met this requirement.

#### **UNDERGRADUATE PROJECTS**

All projects whether as part of general laboratory course work or as final year projects must be risked assessed and the risks minimised. It is the duty of the *project supervisor* to inform the student of any potential hazard and the precautions to minimise this hazard.

### **POSTGRADUATE LABORATORIES**

Users and supervisors of postgraduate laboratories are advised to read the guidelines given in Appendix 3 entitled – ‘**Safety in the Research Laboratories**’.

All laboratories will display important safety and contact information in a prominent position. A typical example may be found in Appendix 3. This should be customised as necessary for each laboratory.

## 6.2 Health and Safety Office Training

The Health and Safety Office is responsible for providing the following specific Health and Safety Training on an ongoing basis;

- (1) Health and Safety Induction of all new employees and students including information on fire and emergency procedures.
- (2) Manual Handling Training
- (3) Fire Warden Training
- (4) First Aid Training
- (5) Management Training in Health and Safety
- (6) Out of Hours Policy Induction Training
- (7) Emergency Response Plan Training
- (8) Risk Assessment & Control Training
- (9) Office Ergonomics Training
- (10) Other central training where risk assessment identifies specific campus needs

Details of upcoming courses are advertised via e-mail on an ongoing basis. As staff will generally be involved in manual handling at some stage in DCU, all staff of the School of Physical Sciences are encouraged to attend Manual Handling Training provided by the Health & Safety Office.

## 7.0 Fire and Emergency Management

A general document describing Fire Evacuation of Block II is provided in APPENDIX 4

### 7.1 Fire Wardens

The following members of staff are trained Fire Wardens.  
Block II, December 2017

<b>Second floor West</b>	<b>2nd Floor East</b>
Robert Nooney	
<b>First Floor West</b>	<b>First Floor East</b>
Alan Hughes	Lisa Peyton
[When in Office]	
<b>Ground Floor West</b>	<b>Ground Floor East</b>
Henry Barry	Alan Hughes [when in laboratories]

Their role is to sweep the building in the event of an alarm activation and to provide information on building occupancy etc. to DCU security and the emergency services in the event of a genuine emergency. All staff and students

are required to comply with the instructions of Fire Wardens and to evacuate the building promptly in the event of an emergency.

In addition the following have responsibility in the event of an alarm activation for the rooms below

Room	Person Responsible
1 <sup>st</sup> / 2 <sup>nd</sup> / 3 <sup>rd</sup> / 4 <sup>th</sup> year Practicals	Academic / Tutor / Demonstrator / Technical Officer
Computing Laboratories	Academic / Tutor / Demonstrator / IT Staff / Technical Officer
N115, N134	Academic / Tutor / Demonstrator / Technical Officer

The School of Physical Sciences, in conjunction with DCU Health and Safety Office, will ensure that sufficient Fire Wardens are trained and available on an ongoing basis to provide an effective service throughout the building

**The School Safety Advisor** is responsible for ensuring that the Health & Safety Office is notified of any changes in the Fire Warden Team and for ensuring that names of new Fire Wardens are added to the waiting list for training.

## 7.2 Evacuation Drills

Evacuation Drills are organised twice annually by the Health and Safety Office in cooperation with the Estates Office. Feedback on performance in terms of time taken to evacuate and particular difficulties with alarm systems / building fabric are notified to all staff via e-mail.

The DCU Evacuation procedure is posted on the Health & Safety Website.

## 7.3 Local measures

All staff are required to familiarise themselves with the locations of

- (a) Escape routes
- (b) Fire alarm call points (red break glass units)
- (c) Fire extinguishers and fire blankets
- (d) Fire assembly points

## 7.4 First Aid and Injury/Illness Management

Fully stocked First Aid boxes are available in the main foyer of Block II and in various other laboratories. A key for the First Aid box in the foyer is held by each of the trained Physics First Aiders.

As of February 2017 the following members of staff are trained as Occupational First Aiders.

Mr Alan Hughes	ext. 5271
Mr Pat Wogan	ext. 5275
Ms Lisa Peyton	ext. 5306
Mr Henry Barry	ext. 5520

They are available to respond to First Aid incidents during normal office hours.

If a Physics first aider is not available, in particular outside of normal office hours, you should immediately contact DCU Security (ext. 5999) whose staff members are all fully trained Occupational First Aiders

**The School Safety Advisor** is responsible for ensuring that the Health & Safety Office is notified of any changes in the First Aid team and for ensuring that names of new First Aiders are added to the waiting list for training.

The DCU First Aid Policy & Procedures, Injury / Incident Management Procedure and the Emergency Ambulance Assistance Procedure are posted on the Health & Safety Website.

## 8.0 Hazard Identification, Risk Assessment & Controlling Risks

- 8.1 A comprehensive review and assessment of hazards, risks and controls within the School of Physical Sciences has been undertaken. This exercise has been carried out in accordance with the definitions and procedures noted below.

A general risk assessment template was circulated to all undergraduate and research laboratories and the results of this have been returned to the School Safety Advisor. A copy of this template and one for general office work is included in **Appendix 3**.

**Appendix 2** contains details of the current Risk Assessments & Control Measures in place in the School of Physical Sciences. All new and amended equipment, procedures and processes will be similarly assessed as they arise and the results similarly recorded. All staff are encouraged to review the hazards listed in Appendix 2 to identify any issues that are not currently assessed and to feedback to the School Safety Advisor.

In relation to postgraduate research, the Academic Supervisor is responsible for carrying out ongoing risk assessment of the research in consultation with the postgraduate student. He/She must ensure that control measures in place comply with all health and safety regulations currently in force. A copy of all such written risk assessments must be supplied to the School Safety Advisor for recording purposes.

A Safety Notice board area has been set up outside the Department Mail Room.  
A written copy of this Safety Document is available in The School Office / Mail Room

## **8.2 Definitions**

*Hazard is any substance, article, material or practice within a work place, which has the potential to cause harm to employees at work or visitors to that workplace.*

Hazards are categorised as Physical, Chemical, Biological, Organisational, Environmental or Human.

*Risk is the potential of the hazard to cause harm in the actual circumstances of use*

*Risk Assessment is the evaluation of the likelihood that harm could arise from the hazard and the likely severity and extent of the harm.*

The outcome of qualitative risk assessment requires that the identified hazards be given a risk rating of 'high', 'medium', or 'low'. Control measures are prioritized based on the risk rating and are commensurate with the level of risk.

## **8.3 Risk Control**

In selecting controls the following hierarchy is adopted.

1. Elimination
2. Substitution
3. Enclosure
4. Guarding
5. Safe systems of work
6. Supervision
7. Training/Information
8. Personal protective equipment (ppe)

All final decisions on risk control must take into account the relevant legal requirements and industry codes of practice.

## **8.4 Unacceptable Risk**

Where the risk cannot be reduced to acceptable levels and finance is not available to implement appropriate controls, it is the policy of the School of Physical Sciences to require that the activity cease or the area closed.

## **9.0 Management of Contractors**

DCU Estates Office operates a mandatory Permit to Work system for all contractors, incorporating a Hot Work Permit System where necessary. All work undertaken by outside contractors on behalf of the School of Physical Sciences must be carried out under a Estates Office issued Permit to Work.

Details of the Permit to Work system are available on the Estates Office web site.

## **10.0 Bullying and Harassment**

The DCU Policy to Promote Respect and Protect Dignity outlines the procedures which should be followed by any member of the University Community who may experience sexual harassment, harassment or bullying.

## **11.0 Stress at Work**

- 11.1 Occupational stress can be defined as ‘the reaction a person may have to excessive demands or pressures arising when they try to cope with tasks, responsibilities or other types of pressures connected with their job but find difficulty, strain or excessive worry in doing so’. Stress can result when the cumulative demands on a person (both occupational and personal/family) exceed the person’s capacity to cope at a given time.

Examples of sources of stress are:

- Organisational change
- Strained working relationships
- Overwork / underwork
- Unattainable / constant deadlines
- Skills shortfalls to cope with job requirements
- Bullying and harassment
- Personal, non work related difficulties

- 11.2 The effects of stress, particularly where pressure is intense and continues for some time, can be sustained and damaging both physically and psychologically. The School of Physical Sciences recognises that from time to time staff may experience work related stress. It is our aim to be proactive in the reduction / management of sources of stress. Staff who are subject to occupational stressors beyond their control are encouraged to seek assistance from their immediate manager in the first instance or from any other member of staff.

*Staff experiencing personal difficulties may avail of the University Employee Assistance Program. This is a confidential service provided by an external agency. Staff may contact **DCU HR Department** to arrange assistance.*

## 12.0 Pregnancy

### 12.1 Pregnant Employees

The School of Physical Sciences is committed to protecting the reproductive health of all employees and students and minimising risks to the unborn. Pregnant employees of the School of Physical Sciences must make their immediate supervisor aware of their condition as soon as possible. Each pregnant employee must complete the web based preliminary risk assessment for submission to the Health and Safety Office. Where the preliminary assessment highlights areas of concern, the Health and Safety Office will complete a more in-depth assessment in conjunction with the employee and/or the School Safety Advisor to establish appropriate controls.

### 12.2 Rest and Breastfeeding Facilities

The University has put in place a 'Mothers' Rest Room' in order to facilitate pregnant employees needing to rest and employees and students wishing to express and store breast milk.

More information on this facility may be found at

[http://www.dcu.ie/safety/pdfs/mothers\\_policy.pdf](http://www.dcu.ie/safety/pdfs/mothers_policy.pdf)

## 13.0 Out of Hours Work

'Out of hours' working is defined as follows;

- Any Laboratory / Experimental work undertaken **outside** of 9am -5.15pm Monday to Friday.
- **Any other low risk work** undertaken, **outside** of 7am-10pm Monday to Friday or **during** the hours of 9am - 6pm on Saturdays, Sundays & Bank Holidays.

Normal working hours				
Times when you are NOT required to log in				
	Monday -Friday	Saturday	Sunday Bank holidays	
Office Type Work	7.00 - 22.00	9.00 – 6.00	9.00 – 6.00	
Laboratory Based Work	9.00 – 5.15			

The School of Physical Sciences strongly recommends that in the interest of health, safety and personal security, out of hours work should only be undertaken when absolutely necessary and when no other alternatives are available. Where employees or postgraduate students need to undertake work out of hours they must adhere strictly to the University Policy & Procedures for Lone/Out of Hours Work. This policy is available on the Health & Safety Office Website.

Anyone undertaking **Out of Hours Work** must be trained in the DCU out of hours policies and must use the WEB login & out system for the duration of that out of hours work

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# Appendix 1

## Organisation for Safety

**In** the School of Physical Sciences, responsibility for implementing safety policy and practices lies with the Head of Department, in the first instance.

Day to day implementation of safety policy has been delegated to all staff in the following manner.

### **School Safety Committee**

A School safety committee has been established which consists of

Head of School	Prof. Enda McGlynn
Academic Representative	Jean-Paul Mosnier
Chief Technical Officer	Alan Hughes

### **School of Physical Sciences Safety Committee - Terms of reference**

A Physics Safety Committee has been established whose Terms of Reference may be summarised as follows:

- To provide information and/or reports for the Safety standing item on the agenda of Physics School meetings
- To promulgate School, Faculty & University Health and Safety Policies and procedures amongst students and staff.
- To provide information and/or training as required
- To implement University policy as appropriate at School level
- To liaise with the Faculty Safety Committee & the University Safety Officer

A safety notice board with safety information is on the main corridor outside the School Mail room

This Safety Statement is available

- In printed form in the school office
- In PDF / WORD format for downloading from the Physics Department Web Site at <http://www.dcu.ie/sites/default/files/safetystatement.pdf>  
<http://www.dcu.ie/sites/default/files/physics/safetystatement.pdf>

**Fire wardens**

Fire wardens for Block 2 are as follows

<b>Second floor West</b>	<b>2nd Floor East</b>
Ray Murphy	Dorota Wencel
<b>First Floor West</b>	<b>First Floor East</b>
Alan Hughes	Lisa Peyton
[When in Office]	
<b>Ground Floor West</b>	<b>Ground Floor East</b>
Henry Barry	Alan Hughes
	[When in UG laboratories]

All fire wardens will receive training from the university in order to carry out their role

**Research laboratories/ Research groups**

It is the responsibility of the Principle Investigator of a research group to

1. Maintain an up to date chemical inventory for their research group
2. Provide risk assessments for hazardous equipment in their laboratories
3. Ensure that bi-monthly inspections are carried out to ensure
  - That fire exits are kept clear.
  - House-keeping standards are maintained
  - Chemical inventory is updated

Every Research Supervisor is responsible for ensuring the safety of their research workers, both students and staff. All supervisors are advised to read the guidelines on ***Out of hours working*** [[http://www.dcu.ie/safety/out\\_of\\_hours.shtml](http://www.dcu.ie/safety/out_of_hours.shtml)], ***Safety in the Research Laboratory*** and for establishing ***Safe Systems of Work*** which are both included in **appendix 3**

The Safety Person Associated with each room in Block II is given in the following table.

<b>Name</b>	<b>Rooms</b>
Dr Bert Ellingboe	114, 116, 116 A, 116 B, 116 C, 116 D, 217, G14C, G13
Prof. Colette McDonagh	226, 226A, 226B, 226C, 226D, 226E, 226F, 126, 127, 128, 225, 223
Dr Enda McGlynn	G05G15, G06, 129, 130, 130A, 131, 132
Prof. Greg Hughes	125, 125A, 117, 211(+C), 211A, 211B, 124
Prof John Costello	121, 121A, 122A, 122B, 122C, 122D
Prof Jens Ducrée	203, 203 A, 214, 215,A,B, N227
	227, 227A, 227B, 227C, 227D, 227E, 227F
Dr Jean-Paul Mosnier	121B, 122, 123
Dr Paul van Kampen	213
Prof Miles Turner	224

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## **Appendix 2**

### **Risk Assessments & Controls**

The most significant health & safety hazards encountered in the school of Physical Sciences can be grouped in accordance with the following categories

Physical Hazards	P19
Chemical Hazards	P31
Biological Hazards	P32
Human Factor Hazards	P33

## **Physical Hazards**

- Fire
- Manual Handling
- Visual Display Units
- Slips, Trips & Poor Housekeeping
- Mechanical Workshop
- Electricity
- Radiation
- Laser safety
- Bottle & Piped gas
- Cryogenic liquids

**Hazard: Fire**

**Risk Assessment: Medium**

**Who may be Harmed & How:**

Staff, students, visitors – potential for multiple fatalities

**Controls: Fire Safety Management Program**

- All occupied buildings fitted with fire alarm systems
- Detector and Alarm systems fully maintained
- All systems linked to Security Control Room
- Trained Fire Wardens in place to assist in evacuation & sweep of building in event of alarm activation
- Evacuation Drills held at least annually and results fed back to staff & management
- Fire extinguishers fitted and maintained in all buildings
- Escape routes and exits inspected regularly to ensure that they are available for use
- Emergency lighting maintained

**For further information and procedures refer to APPENDIX 1 and APPENDIX 4**

**Responsible Persons:**

<b>Safety Advisor</b>	Provision of sufficient Fire Wardens to implement evacuation systems
<b>Estates Office</b>	Maintenance of alarm & lighting systems – Investigation of alarm activations and pre-alerts
<b>Health &amp; Safety Office</b>	Coordination of evacuation drills & staff feedback Provision of training for Fire Wardens
<b>Staff:</b>	To evacuate building on alarm activation – Not to impede escape routes / exits Be familiar with means of escape, location of Fire Assembly Points, and location of call points and fire extinguishers.

**For further information and procedures refer to APPENDIX 1 and APPENDIX 4**

**Hazard:** **Manual Handling**

**Risk Assessment:** **Medium**

**Who may be Harmed & How?**

Staff engaged in routine lifting / pushing / pulling / accessing materials at height. Staff involved in once off lift – office moves, taking deliveries etc. Potential injuries include back injury / lacerations / crush injuries

**Controls:** The need for manual handling is eliminated where possible with the provision of mechanical lifting equipment

- Loads to be manually handled are risk assessed and the method of lifting established to take account of the weight, shape, condition and location of the load.
- Training in Manual Handling techniques is available to all staff through the Health & Safety Office
- Staff with pre existing back problems may be required to undergo medical review prior to or as a result of such training
- In office areas, kick stools are provided where access to materials at a height is required.
- In archiving areas etc mobile stairs are provided to provide a safe working platform at heights?
- Trolleys are provided to assist in the transfer of loads
- Appropriate lifting equipment, where provided will be used in lifting difficult or heavy loads.
- Suitable gloves shall be used for handling loads with the potential to cause lacerations etc.

**Responsible Persons:**

**Head or other nominated person/s**

- to ensure that appropriate lifting techniques and mechanical aids are provided
- to ensure that staff engaged in manual handling attend manual handling training

**Health & Safety Office**

- to provide manual handling training

**Staff**

- to lift in accordance with common sense, training & risk assessment
- to use mechanical aids and gloves when required

**Hazard:** **Work with Visual Display Units (VDUs)**

**Risk Assessment:** **Low**

**Who may be Harmed & How?**

**Office based staff and others who use a VDU for more than 1 hour per day. Prolonged use may result in Work Related Upper Limb Disorders (WRULDs) including muscle strain, back pain, carpal tunnel syndrome and eyesight problems**

**Controls:**

- All new furniture and VDU equipment complies with the requirements of the Safety, Health and Welfare at Work
- All staff are encouraged to complete the Computer Workstation Self Audit Checklist available on the Health & Safety Web. Where the assessment identifies particular issues that cannot be resolved locally, or where further advice is required staff members are required to seek assistance from the Health and Safety Office.
- The Health & Safety Office provides a rolling program of training in Office Ergonomics. All staff members are encouraged to attend one such training session.
- VDU eyesight testing is available to all users. Where such testing indicates that special corrective lenses are required exclusively for VDU work the basic cost will be covered by DCU
- Specific equipment, identified as required as a result of individual risk assessment, is supplied by the School/ Unit etc (eg footrest, monitor stand etc)

**Responsible Persons:**

***Head or other nominated person/s***

- to ensure that correct VDU furniture and equipment is provided
- to ensure that equipment specified as a result of individual risk assessment is made available -

**Health & Safety Office**

- to provide a rolling program of Office Ergonomics Training

**Staff**

- to complete the web based self-assessment
- to attend office ergonomics training
- to report any symptoms of suspected ergonomic injury and seek H&S Office assistance in resolving their symptoms



**Hazard: Poor Housekeeping / Slips, Trips & Falls**

**Risk Assessment: Medium**

**Who may be Harmed & How?**

All staff, students and visitors in areas under our control. Poor housekeeping can result in the accumulation of combustible materials, the impeding of escape routes, the proliferation of trip hazards, slippery floors, objects falling from heights etc.

There are designated areas, which have restricted access due to the high risk of injury, of being a danger to others, or risk of damage to important equipment.

**Controls:**

- All areas must be kept clean & tidy at all times. All corridors and passageways must be kept free from obstruction at all times.
- All workplaces, passageways and stairs are adequately lit. Problems with lighting must be reported to the Estates Office for immediate repair
- All defects in flooring / stair treads and handrails must be similarly reported.
- Storage and stacking of materials / articles must be done in specifically designated areas. Heavier / bulkier articles must not be placed above head height where mechanical lifting devices and/or appropriate steps or other access is not provided.
- All liquid spillages must be cleaned up as soon as possible. The Estates Office must be contacted to deal with spillages in corridors. All spillages must be cordoned off / warning signs erected if not immediately cleaned up.
- **Photographic Dark Rooms & and other optics areas used by researchers and Under Graduate students:** Because it is often necessary to work with reduced lighting levels it is most important to ensure good housekeeping. Keep floor areas clear and avoid trailing cables.

**Responsible Persons:**

**Head or other nominated person/s**

- to ensure office layouts are designed to minimize risks to staff
- to ensure all staff are aware of requirements in relation to housekeeping
- to ensure that all building defects are rectified

**Estates Office**

- to repair all notified defects

**Staff**

- to comply with all housekeeping requirements and to report defects

**Restricted access areas**

**Access to roof area Block II** See *“Procedures & Regulations for Roof Access” Appendix 4*

**Hazard:** **Mechanical Workshop**

**Risk Assessment:** **Medium - high**

**Who may be Harmed & How?**

All staff and students who enter or use machinery in this area

**Controls:**

There are a number of serious mechanical hazards in the mechanical workshop situated in NG 14 & NG 15

No visitor or member of the School of Physical Sciences is permitted to use any equipment in this area without first getting permission from the principal workshop Technical Officer Mr. Des Lavelle

The principal Workshop Technical Officer has the right to refuse permission to any one (s)he deems not sufficiently competent to use such machinery

Oxy-acetylene and TIG welding create further hazards such as hot surfaces, fire and ultraviolet light. These procedures can only take place in the designated area within the workshop and only by operators deemed competent by the principal workshop Technical Officer. Operators must use the appropriate protective equipment.

**Hazard:** Electricity

**Risk Assessment:** Low - high

**Who may be Harmed & How**

All users and occupants of the building

**Controls:** *Precautions in use of Electricity*

*If in doubt about any electrical apparatus, advice should be obtained from a competent person, from the university Safety Office or from the Estates Office.*

The fundamental hazard is of electrocution. 25 volts can be fatal under certain circumstances. The voltage normally available at socket outlets and lighting points is 230 volts at 50 Hz. Voltage on 3-phase equipment such as electric motors etc. is 415 volts. Electrical shock can be caused by bodily contact between two conductors or between a conductor and earth. Electrical shock and high frequency burns can be sustained from equipment such as oscilloscopes and TV apparatus.

**General Precautions**

Under no circumstances must electrical installations be interfered with. The fixed electrical installation of the buildings is the responsibility of the Estate Office. The fixed installation includes wiring up to and including the socket outlet, or the isolator in the case of more permanently installed pieces of equipment. No one may work on the fixed installation without permission from the Estate Office. The School of Physical Sciences is responsible for wiring installations and equipment from the socket or isolator outwards.

People using electrical equipment, as with all work equipment, should report any defects that they note so that remedial action may be taken. Defective equipment should be labeled as faulty and rendered temporarily unusable e.g. remove its associated plug if it is not repaired immediately.

The range of **checks** which users should be able to carry out, **and report to the appropriate person**, as a routine part of their work includes:

- Damage (apart from light scuffing) to the insulating sheath around the cable;
- Damage to a plug;
- Joints in the cable other than by way of proprietary cable connectors;
- The ineffective securing of the outer insulation sheath of the cable where it enters the plug or the equipment, e.g. the coloured insulation of the internal cable cores is showing;
- Damage to the external casing of the equipment;
- Evidence of overheating, e.g. burn marks or discoloration to plugs, cables, or casings;
- Evidence of inappropriate use, e.g. it is wet or excessively contaminated with chemicals, oil or dirt etc.

- Any loose connections, for example loose screws in plugs and switches, must be reported for remedial action to be taken.

## **Specific Precautions & instructions**

### **Flexible Cables**

Ensure that flexible cables are of the correct size for the load to be carried and sheathed with rubber or PVC to withstand mechanical damage.

### **Portable Appliances**

These should be used with great care and particular attention paid to the condition of the flexible cable and its termination at the equipment and at the plug.

### **Fuses**

The smallest fuse compatible for the apparatus should be used in order to protect the equipment and flexible cable and to reduce the fire hazard.

### **Fire Hazard**

Users should be aware that the amount of electrical energy available from a socket outlet is more than sufficient to cause a fire if the equipment is misused or wrongly connected.

### **Radiation Hazards from High Voltage Electrical Equipment**

Users should be aware that in equipment incorporating electronic tubes operating at potentials above 5000 volts e.g. cathode ray tubes, electron microscopes, there is a risk that X-rays may be emitted.

### **Radio Frequency heating**

Users should be aware that when working with or near RF power sources that there is the potential for burns and/or electrical shock without direct contact with the equipment. Local burning of the skin may be produced, not only by making contact or being close to, the equipment when the power is switched on, but also as a result of heat produced by induced currents in metal conductors such as watches and rings worn next to the skin.

**Hazard:****Radiation**

This covers all nuclear radiation and other high energy electromagnetic radiation such as X rays & gamma rays

**Risk Assessment:****Low**

Depends on the radiation source, type, strength and length of exposure

**Who may be Harmed & How?**

Staff, students, visitors

Potential for unknown long-term effects

**Controls:**

- All uses of radiation must be approved by the Department Safety committee or by the faculty Radiation Officer
- Radioactive sources shall normally be kept in the radiation store in NG13 or in an appropriate safe location when not in use.
- Sources for use in the Undergraduate Laboratories must be signed out by an authorised person for that laboratory. A record book is kept in the radiation store in NG13. The Radiation Safety Officer, Michael Burke, maintains a register of those deemed competent to remove sources from the store.
- Film badges are required when working with high power X-ray equipment and other strong radiation sources.
- Every year the Radiological Protection Institute of Ireland issues the school with a licence. This licence lists all radioactive sources in use within the School. A copy of this licence must be displayed in a prominent place in all areas wherever these sources are used.
- The University Radiation Safety Officer, Dr. R. Devery must be informed of any new radioactive materials obtained and also of any radioactive materials which are to be disposed or equipment which is decommissioned.

**Responsible Persons:**

**School Safety Committee** To advise and approve the use of radioactive sources

**Faculty radiation Officer** Michael Burke

**Staff:** To act in a reasonable manner and not to endanger others

Additional information, including forms for amending the DCU radiation license may be found at a <http://www.rpii.ie/regulation/licrenew.html>

**Hazard:** **Laser Safety**

**Risk Assessment:** **Low**

**Who may be Harmed** **Staff, students and visitors**

**Policy:**

It is the policy of the School that all work involving lasers is carried out in such a way as to prevent undue risk either to those carrying out the work or to those who may otherwise be affected by the work. The school has adopted the Code of Practice 'Safety in Universities': Notes of Guidance, Part2: 1 Lasers. (Revised 1992): The Committee of Vice-Chancellors and Principals of the Universities of the United Kingdom. This document defines the minimum safety standard for the normal use of lasers by the university. The University Radiation Safety Officer may, however, require more stringent regulations for some aspects of safety and for the safety of certain laser systems.

A copy of the 'Notes of Guidance' will be made available to users through the School Safety Advisor. A copy of the videotape programme 'Laser Safety in Higher Education', which was produced in conjunction with the Notes of Guidance is also available from the School Safety Advisor.

The main points may be summarised as follows:

1. A register of all lasers in use of class 3a and above will be kept by the School and updated annually.
2. Only class 1 or class 2 lasers may be used by undergraduate students in general laboratories.
3. All class 3a, 3b and class 4 lasers are only to be used in designated laser areas.
4. The designated laser area will be equipped with the relevant controls and interlocks for the class of laser being used.
5. The School will maintain a register of all designated laser users of class 3a lasers and above.
6. The School & relevant Research Group will provide appropriate training for all designated laser users.
7. All users should be aware of the associated hazards of working with lasers including, potential eye damage, fire, high voltages and chemical hazards associated with laser dyes etc.
8. Where the risks to the eye from lasers cannot be totally eliminated using administrative or engineering control, the appropriate laser goggles must be worn. If it is necessary to work in close proximity to an exposed high intensity laser, suitable protection will be worn for the hands and forearms. This is most important if the laser is operating in the ultra-violet. However, personal protection **MUST ALWAYS BE REGARDED AS THE LAST LINE OF DEFENCE AGAINST LASER RADIATION.**

**Hazard:** **Bottled Gas & Piped Gas system**

**Risk Assessment:** **Low – high**

**Who may be Harmed & How?**  
**Staff and students .....**

**Controls:**

The School operates a piped gas system for some common gases and therefore the use of large cylinders of compressed gases should be kept to a minimum.

The use of gas cylinders inside the building is discouraged and should only be done when absolutely necessary

Where gas cylinders must be used it is recommended that as small a size as is reasonably practicable be used and that they be in the building only for as long as needed.

Cylinders of compressed gas must be moved only in the proper trolleys (which are designed for such use).

Cylinders must be securely strapped to a secure mounting before, during and after use to prevent any possibility of them falling over

An inventory of gases stored and used within the School will be created and will be updated regularly

**The procedure for changing a gas bottle in the central stores is given in**  
**APPENDIX 4 P60**

**The procedure for using the gas bottle lift in the central stores is given in**  
**APPENDIX 4 P61**

**Hazard: Cryogenic Liquids**

**Risk Assessment: moderate**

**Who may be Harmed & How?**

**Cryogenic liquids have the potential to cause any of the following**

- Burns to skin either directly or from surface cooled by such liquids
- Skin can freeze and adhere to cooled surfaces tearing on removal
- Large volumes of gas are created on evaporation ~700 volume for volume
  - Displacing oxygen with potential for asphyxiation
  - And/or injuring by sudden & explosive expansion in a confined container
- Oxygen freezes at a higher [less cool] temperature than Nitrogen which could giving rise to the unexpected collection of liquid oxygen potentially resulting in
  - Sudden & explosive expansion of liquid oxygen in a confined area
  - Explosion/combustion due to oxygen rich environment

**Controls:**

**The school acknowledges the dangers associated with Cryogenic liquids such as LN2 and liquid helium and they shall only be used in the following manner**

- Only suitable trained personnel are permitted to use cryogenic Liquids
- Always use liquid nitrogen in a well-ventilated area, especially when filling a warm container or inserting a warm object, as large volumes of nitrogen gas are evolved
- Avoid skin contact with either liquid nitrogen or items cooled by liquid nitrogen as serious burns may occur or skin may adhere to cooled surfaces
- Always wear approved Personal Protective Equipment to protect against splashes,
- Use only equipment, which has been designed for low temperature cryogenic use. Standard thermos flasks are not permitted
- Always fill room temperature dewars slowly to reduce temperature shock effects and to minimise splashing
- Users must be aware of the possibility of formation of liquid oxygen in cold-traps that are open to air

**Additional information is given in the Procedure for the use of Cryogenic Liquids is given in APPENDIX 4 P50**



## Chemical Hazards

### General Guidance

Work with chemicals can present toxicological and/or physical hazards. Where the work could present a toxicological, i.e. health, hazard then it is subject to the requirements of the Control of Substances Hazardous to Health Regulations 2002 (HSAF).

Work with Solvents and certain other chemicals substances presenting a flammable or explosion risk

### Control of Substances Hazardous to Health (HSAF)

An assessment must be made under the HSAF regulations of the potential and actual risk of working with chemicals and substances. A competent person, as designated by and also responsible to, the Head of School, must carry out this assessment

The assessment procedure shall closely follow the procedures spelt out in the University Code of Practice entitled Control of Substances Hazardous to Health (HSAF) - Chemical Hazards. The detailed basis for such an assessment is given in **Appendix 3** using a HSAF form

- All new chemicals ordered within the School must have an HSAF assessment.
- Each HSAF form must be approved and signed by an appropriate person
- No order will be processed without a HSAF assessment attached to the requisition.
- A copy of all completed HSAF forms will be kept in the school Office.
- Blank copies of the HSAF Assessment form are available from the School Office and in this Physics Safety Statement

The flammable nature of solvents is recognised. Their volumes shall be kept to a minimum and they shall be stored in an appropriate location.

There are a number of chemicals, which have specific procedures in place for their use. These include:

Hydrofluoric Acid

**Appendix 4**

Cryogenic Liquids

**Appendix 4**

## **Biological Hazards**

### **At present we have no identifiable biological hazards**

The Department Safety Committee must be informed [with plenty of notice] before any item or practice, which might involve a biological hazard, may be introduced to the School of Physical Sciences. The Safety committee will then

- Investigate and assess the potential hazard
- Ensure that appropriate procedures are put in place prior to arrival of the hazard

In the event that such a risk does arise then we would propose to implement the following

- We will Identify all the biological agents and genetically modified organisms in use (or potential for generation including hepatitis, HIV, Weils Disease etc)
- We will list those in use by their classification (in accordance with legislation)
- We will risk assess for use/misuse and establish and document controls including occupational hygiene measures
- We will list persons responsible for implementation of each control measure
- We will document requirements for PPE, cabinets etc
- We will document systems in place for the maintenance of all mechanical ventilation control systems
- We will document procedures for the maintenance of safety systems – showers, safety stations etc
- We will note persons responsible in each case
- We will document training in place for staff etc

## **Human Factor Hazards**

We note the possibility of the following human hazards and will refer any such occurrence to the Safety Committee and/or the Head of Department as appropriate for assessing and for setting out suitable controls, or for passing onto the appropriate authority.

- Violence
- Lone working
- Bullying and harassment
- Stress

We shall adhere to the DCU policies in place governing the above hazards

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# **Appendix 3**

## **Safety Checklists & Safety Forms**

Office Safety Check list aid	P38
Laboratory Safety Check list aid	P40
HSAF sheet	P43
MSDS data sheet sources	P48
Typical Emergency Contact information	P49
Exit Check list	P50
Safe Systems of Work: Guidance	P51
Safety in the Research Laboratories	P52
U.G. Project Risk assessment	P54
School Risk Assessment Form	P59

<h2 style="margin: 0;">Office Safety Checklist</h2> <p style="margin: 0;"><i>Top 4 issues to be prioritised for action within agreed time frame</i></p>
---

<b>Office Area Inspected:</b>	<b>Date:</b>
<b>Inspector 1:</b>	

1.0	HOUSEKEEPING	Y/N
1.1	Is the overall condition of room/area tidy with surplus items stored away safely?	
1.2	Are heavy items stored at an appropriate height for ease of manual handling?	
1.3	Are passageways, especially emergency exits, kept free of obstruction?	
1.4	Are floor coverings damaged or worn so as to be a tripping hazard?	
1.5	Are there trailing cables, which are likely to be a tripping hazard?	
1.6	Are filing cabinets anchored and interlocked (only 1 drawer opens at a time)?	
1.7	Are sufficient bins provided for rubbish, and are they emptied regularly?	
1.8	Are kettles, coffee machines, etc., securely fixed to avoid risk of scalds?	
1.9	Are areas cleaned regularly?	
1.10	<b>ANY OTHER HOUSEKEEPING OBSERVATIONS</b>	
2.0	<b>ELECTRICAL SAFETY</b>	
2.1	Are all plug tops and sockets in good condition (Insulating tape / broken plug tops / loose sockets etc are unacceptable)	
2.2	Are all electrical leads / cables free from obvious damage (no exposed cores / frayed cables/ burn marks)	
2.3	Are electrical repairs carried out by trained and competent personnel only?	
2.4	Are there any multi-point adapters in use?	
2.5	<b>ANY OTHER ELECTRICAL SAFETY OBSERVATIONS</b>	
3.0	<b>FIRE SAFETY</b>	
3.1	Are Fire Wardens appointed for each floor of building	
3.2	Have Fire Wardens undergone training in respect of their duties	
3.3	Are fire exits & escape routes accessible and unimpeded	
3.4	Is a fire drill conducted at least annually?	
3.5	Do all personnel know where fire extinguishers are located	
3.6	Are all flammable materials stored securely in appropriate locations?	
3.7	Do all staff know the alternative escape routes in the event of fire?	
3.8	Are the escape routes clearly marked?	
3.9	<b>ANY OTHER FIRE SAFETY OBSERVATIONS</b>	
4.0	<b>VDU ERGONOMICS</b>	
4.1	Are all chairs in use at VDU stations fully adjustable (Height adjustable, backrest height adjustable, backrest tilt-able)	
4.2	Do staff take regular breaks from display screen work (min 5 minutes in each hour)	
4.3	Is there adequate space underneath desks to swivel knees 90 degrees in each direction	
4.4	Are windows fitted with blinds to eliminate glare	
4.5	Where chairs have armrests are these adjustable	
4.6	Is the temperature in the office 17.5 degrees or above	

4.7	Are headphones provided for staff who spend extended time on the phone			
4.8	<b>ANY OTHER VDU SAFETY OBSERVATIONS</b>			
<b>5.0</b>	<b>MANUAL HANDLING</b>			
5.1	Are staff who routinely lift / Push / Pull loads trained in correct manual handling techniques			
5.2	Are ladders, kick-alongs available to access higher shelving/storage space?			
5.3	Are trolleys / other manual handling aids available to transport loads			
5.4	Are heavy items stored at an appropriate height for ease of manual handling?			
5.5	<b>ANY OTHER MANUAL HANDLING OBSERVATIONS</b>			
<b>6.0</b>	<b>EMERGENCY PREPAREDNESS</b>			
6.1	Is a member of staff trained in occupational First Aid			
6.2	Is the First Aid box located in a prominent position – With contact details for First Aid Treatment			
6.3	Are all staff aware of what to do in the event of an emergency (requiring First Aid / Spotting a fire etc)			
6.4	Is the Security Response Number prominently displayed for staff working out of hours?			
6.5	<b>ANY OTHER OBSERVATIONS</b>			
	<b>REMEDIAL MEASURES REQUIRED</b>			
	List Issues For Rectification in order of Priority	Required Action	Responsible Person	Before What Date?

*Note 1: Readily resolved Issues should be rectified during the inspection process*

*Note 2: Time frame for rectification of prioritised issues must be agreed by management with responsible person*

Inspector's Signatures: (1) \_\_\_\_\_ (2) \_\_\_\_\_

Date of next Scheduled Inspection: \_\_\_\_\_

## **Laboratory Safety Check-list aid**

- This sheet is intended as an **aid** in producing a list of possible risks. It is not meant to be a comprehensive or complete listing of all risks in your area. Each laboratory is unique.
- Walk around your research area and itemise all the safety or potential safety issues that you can come up with. Even those that you are not sure of. At this stage make **NO ATTEMPT** to look for solutions. Simply brain storm and take notes. At a later stage, **YOU** will be the best judge for assessing risks
- Let me know if you come up with other item that should be added to this list

**Room number** ----- **Date** ----- **Name** -----  
--

<b>Physical</b>	
Darkness power failure tripping, bang head	
Manual handling issues	
Safe access to all equipment,	
Safe storage on shelves, Heavy items high up!	
Wires trailing (trip)	
Sharps / glass etc	
How are sharps disposed of?	
Pressure or vacuum systems, failure hazards	
If doing repairs or servicing, any hazards, easy access, heights, sharp edges etc	

<b>Fire</b>	
Is there an easy exit route from all parts of the laboratory / room, Locked doors?	
Are all emergency exits clearly marked	
In the event of power /light failure could you find your way to an exit	
Is there suitable and sufficient fire equipment e.g. extinguishers / blankets	
What fire sensors are in your laboratory? smoke / heat [may be an issue with bake out of vacuum chamber]	
Any heat sources, potential sources of ignition	
Is there significant quantity of combustible material stored? Paper, books, wood, cardboard boxes	

<b>Electrical</b>	
All equipment suitably earthed and fused correctly	
High voltage issues	
Water and electrical safety	
Trailing or frayed leads	
Are there safety trip switches on the wall (red mushroom switches )	
Equipment leads secure and intact	
Waste Electrical Equipment	



<b>Chemical</b>	
Protection, glasses, clothing	
Suitable glassware and containers	
Appropriate work area	
Suitable storage of chemical	
Fume cupboards	
Suitable storage & separation of chemical waste	
Safe disposal of waste	
Effect on others nearby or after chemical work completed	
Sharps / glass	
Where do you keep information on chemical used? MSDS sheets,	
Are you aware of dangers & handling procedure for chemical used in your area	
Spills, splashes and emergency awareness for chemicals used	

<b>Gases</b>	
Un-restrained gas cylinders	
Unused or unnecessary cylinders	
Transporting cylinders to / from labs	
Flammable risks	
Poisoning / asphyxiation by gas	
Piped gas system potential dangers	

<b>Radiation</b>	
Sources box, shielded , store safely	
Danger of inhalation	
Disposal system	
Individuals registered with Michael Burke	
Licensed to have all sources used?	

<b>Laser / “light”</b>	
Interlocks on doors and equipment	
Stray reflections	
Clearly marked safe / danger areas	
Protective glasses	
Sources of UV, protection	
Sources of IR, protection	
X ray source	
Strobe lights – seizures [epilepsy]	

<b>OTHER MISCELLANEOUS RISKS</b>	
Suitable desk & chair	
Computer is set up with good ergonomics	
Height of computer monitor	
Suitable chair	
Cleaners/stranger may walk in, not aware of experimental set up and dangers	
Use of lift -- Fire, Chemicals, gasses, LN2	
Liquid nitrogen/Helium, Cryogenic dangers	
Liquid nitrogen/Helium, Asphyxiation dangers	
Any lab users or visitors with disabilities	
Hot surfaces, burns	
Micro wave	
RF	
Have all laboratory users been trained in the safe operation of equipment	
Water cooling systems, Secure pipe work and hoses	
Floor water sensors	
Is there regular maintenance of equipment and in particular safety devices	
Any particular risk for a person with a disability	
Wheel chair, blind, epilepsy	
Exhaust from oil filled backing pumps	
A4 General safety notice on Door	
MSDS sheets stored in Perspex holders for easy access	

**D.C.U- Faculty of Science and Health  
School of Physics**

**HAZARDOUS SUBSTANCE ASSESSMENT FORM (HSAF)**

This form must be completed by the research worker and then reviewed & signed by the researcher's Supervisor (or a competent Assessor). It may be completed and saved as a Word document for future re-ordering.

For help in the completion of this section, see procedures described in safety regulations for the given faculty school/research center as listed under [http://www.dcu.ie/science\\_and\\_health/index.shtml](http://www.dcu.ie/science_and_health/index.shtml).

Please enter all data requested. Most of the information required will be found on the Material Safety Data Sheet (MSDS) for that reagent.

**No chemical can be ordered without a completed HSAF form.**

Standard Laboratory Personal Protective Equipment (PPE): Safety glasses, White Coat, and appropriate gloves are basic requirements for the use of hazardous substances. Access to a properly functioning fumehood must also be considered when using hazardous substances.

**Section A**

**Before completing this form, ensure you are using the **safest material** possible for the intended experiment or project.**

**Read all sections of the MSDS before completing this form.**

<b>1</b>	<b>Name of Staff member/ Research worker</b>	
<b>2</b>	School/Research Centre	
<b>3</b>	Name of Research worker's supervisor  Name of staff member's Head of School/ Centre	
<b>4</b>	Location of research worker (room number)	
<b>5</b>	Location of storage area of substance (room number)	
<b>6</b>	Hazardous Substance Name and proposed quantity for use ( <b>See note 1</b> )	
<b>7</b>	Brief description of proposed use for this substance, including frequency of use.	

<b>8</b>	<p>Hazards Identification (<b>See note 2</b>)</p> <p>List the Risk/ Hazard Statements</p> <p>“R” or “H” phrases</p> <p>(See section 2 of MSDS)</p>	
<b>9</b>	<p>Hazards Identification continued.</p> <p>List the Safety/ Precautionary Statements</p> <p>“S” or “P” phrases</p> <p>(See section 2 of MSDS)</p>	
<b>10</b>	<p>Material Incompatibilities</p> <p>(See Section 10 of MSDS – stability and reactivity)</p>	
<b>11</b>	<p>List basic first aid measures if exposed to the substance</p> <p>(<i>See section 4 – first aid measures</i>)</p>	
<b>12</b>	<p>How will you dispose of waste generated?</p> <p>Consider the following points:</p> <ul style="list-style-type: none"> <li>- Unused chemical</li> <li>- The waste generated using this substance</li> <li>- Need to segregate waste streams?</li> <li>- Where will this waste be stored</li> </ul> <p>(Check local practice within your school/ centre or school safety representative.).</p>	
<b>13</b>	<p>What precautions will be taken to eliminate the inhalation risks specified in the MSDS for this substance, e.g. PPE, fume hood, breathing apparatus?</p> <p>(See Section 8 of MSDS for exposure controls)</p>	
<b>14</b>	<p><b>If the substance is a known carcinogen, teratogen, or mutagen, then sections 15 – 23, must be completed.</b></p>	

## Section B

15	What measures are in place to minimise exposure?	
16	Are additional warning signs required to minimise risks to other users (e.g. pregnant researchers etc)	
17	Are storage and labelling provisions adequate?	
18	Does the working area require further demarcation?	
19	Is further PPE required? e.g. dust mask, respirator, etc	
20	Is health surveillance recommended? If so, do not proceed with experiment or purchase the reagent. Consult with your supervisor.	
21	Is the risk in using this substance acceptable? Yes or No (If 'No' do not complete this assessment without further consultation)	
22	Any other details	

*By completing this assessment, the research worker acknowledges the risks associated with using this substance and will take all necessary steps to ensure that this assessment is followed at all times when using this substance.*

**Date:**

**Signature of Research worker:**

**Date:**

**Signature of Supervisor:**

**Standard emergency procedures to be followed when using this substance:**

- **Spill release:**

In the event of a spill, LEAVE THE AREA IMMEDIATELY. !

LOCK ACCESS DOOR TO AREA WHERE POSSIBLE AND DISPLAY A 'DO NOT ENTER!!' BARRIER SIGN ON THE LABORATORY DOOR.

Inform technical staff inside normal university working hours, or inform security staff/fire services outside normal university working hours.

- **Event of fire.**

Activate fire alarm. Evacuate work area. Inform the fire wardens, security or technical staff as appropriate.

- **Waste disposal:**

**Consult procedures described in safety regulations for the given faculty school/research centre as listed under [http://www.dcu.ie/science and health/index.shtml](http://www.dcu.ie/science_and_health/index.shtml) or check local practice within your school/ centre or school safety representative**

---

**Note 1:** Order the minimum quantity required for the experiment regardless of the discounts offered by vendor for larger quantities. The cost of waste disposal for unused material far outweighs the savings for buying in bulk.

See section 11 for available toxicological information

---

**Note 2:** See section 2 of MSDS and note the **Hazard/Precautionary statements** **or** the **Risk and Safety phrases**.

Copy and paste the appropriate pictogram into section 8 of this HSAF form.



### Global Harmonisation System for the labelling of chemical agents

The Global Harmonisation System for the labelling of chemical agents came into effect as from December 2010. What this means for users is that there will be a 'crossover' period between the older system for the safety classification of chemical reagents (R and S phrases), and the newer G.H.S. system.

Full implementation of the new G.H.S. system will be effective by June 2015.

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## **Where to find MSDS datasheets**

### **Before Ordering or Using Chemicals**

<http://www.sigmaaldrich.com/safety-center/msds-search.html>

Type the chemical name into SEARCH box – top right hand corner  
[e.g. Toluene, HF, nitric acid ]

This will bring up a range of chemicals containing your search item  
Chose the most appropriate one and select the MSDS sheet

This is a PDF document which can be saved to your PC  
It is advisable while saving to modify the file name rather than use the generic  
'DisplatMSDSPage.pdf'

---

## **Other useful sources of Chemical Information**

The following are useful sites for getting MSDS and other chemical hazard information  
when completing the HSAF

Alternative online sources of MSDS are

<http://iris.fishersci.ca/MSDS2.nsf/Search?OpenForm>

[www.piercenet.com](http://www.piercenet.com)

<http://biochem.roche.com>.

<http://www.ilpi.com/msds/#What>

<http://physchem.ox.ac.uk/MSDS>

Oxford – Chemical safety information

<http://www.rsc.org/pdf/ehsc/comprsn.pdf>

Definition of competent person for risk assessment & HSAF

[http://cartwright.chem.ox.ac.uk/hsci/chemicals/hsci\\_chemicals\\_list.html](http://cartwright.chem.ox.ac.uk/hsci/chemicals/hsci_chemicals_list.html)

Useful, plain English, chemical information

<http://www.hse.gov.uk/pubns/indg136.pdf>

Excellent overview of how to risk assess chemicals  
taken from this WEB site - <http://msds.chem.ox.ac.uk/>



*Template only – Some parts require filling in*

## ***EMERGENCY CONTACTS***

**For posting prominently in laboratory**

<u>ROOM NUMBER</u> . . . . .	<u>DATE</u> . . . . .
<u>CONTACT NAME &amp; Number</u> . . . . .	. . . . .
<u>SECURITY - DCU</u>	Dial: <b>5999</b>
<u>FIRE</u>	Dial: <b>5999</b>
<u>AMBULANCE / FIRE SERVICE</u>	Dial: <b>5999 – DCU security</b> Ask for Emergency Services
<u>FIRST AID PERSONNEL</u>	<b>Alan Hughes 5271 N102</b> <b>Lisa Peyton 5306 N144</b> <b>Pat Wogan 5275 N221</b> <b>Henry Barry 5520 NG23</b>
<u>CAMPUS NURSE / DOCTOR</u>	Dial: <b>5143</b> Contact <b>D-Doc</b> service <b>1850 22 44 77</b>
<u>NEAREST HOSPITALS</u>	<b>Non-Emergency medical injury care</b> Mater Smithfield Rapid Injury Clinic <b>Mon/ Fri 8-5.30 Taxi - if needed</b> Mater Hospital Phone: <b>01 8301122 / 8032000</b> Beaumont Hospital Phone: <b>01 8377755</b>
<u>POISON INFORMATION SERVICE</u>	<b>Beaumont Hospital</b> Phone: <b>(01) 809 2166 / 809 2566</b>
<u>TAXI:</u>	<b>DCU Reception</b> ext. 5181 / 5000 Phone: <b>01 8553333</b>
<u>SCHOOL SAFETY ADVISOR</u>	<b>Alan Hughes Dial: 5271</b> or any member of Physics Safety Cttee.
<u>UNIVERSITY SAFETY OFFICER:</u>	<b>Paula Kierans Dial 8896</b>
<u>BUILDINGS / ESTATES OFFICE:</u>	<b>Dial 5362</b>
<u>OTHER SERVICES</u> . . . . .	. . . . .
[E.g. Supervisor, service engineer contact numbers ] . . . . .	. . . . .

# School of Physical Sciences

## Departing Checklist

### Staff, Researchers & Post Graduates

Name of Person Departing \_\_\_\_\_ Date \_\_\_\_\_  
 Group Name / Laboratory \_\_\_\_\_

Tick if task has been completed

1. Keys returned:
 

Office

☐

Laboratory

☐

Lift

☐

Action [if any] for door codes \_\_\_\_\_

☐
2. Borrowed equipment/manuals/books/library books/ papers returned ☐
3. Responsibility for Equipment, Chemicals or other Group Function transferred to (state name) \_\_\_\_\_ ☐
4. All chemicals and chemical waste have been safely disposed of ☐
5. Ensure name is removed from all Committees & Dept. functions  
 E.g. Safety committee, list of First Aiders, Fire wardens \_\_\_\_\_ ☐
6. Procedure/protocol of any new program or piece of equipment documented (state location) \_\_\_\_\_ ☐
7. Data and software relevant or necessary to project, stored (state location) \_\_\_\_\_ ☐
8. List of equipment necessary to project, stored @ (state location) \_\_\_\_\_ ☐
9. Un-subscribed from all journals (or changed mailing address) ☐
10. E-mail address removed from **Group Name** and Physics mailing lists ☐
11. **Group Name** web page up-dated ☐
12. Contact number/address left with (state name ) \_\_\_\_\_ ☐

If any of the above tasks have not been completed state reason(s) why not

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Supervisor signature \_\_\_\_\_

## **Safe Systems of Work: Guidance**

In establishing a safe system of work the Responsible Person in Charge (Supervisor) should take into account the following:

- Is the worker competent to carry out the work required and has he/she received all relevant information, instruction and training necessary to ensure, so far as is reasonably practicable, his/her health and safety while the work is in progress.
- Has the work area been inspected to ensure, so far as is reasonably practicable, that it is in a safe condition and without risks to health?
- Have safe means of access to and egress from the work area provided?
- Has the equipment to be used been inspected to ensure that it is (a) suitable for the intended use (b) free from defect(s) and (c) (in the case of prescribed dangerous machines) guarded?
- Are the materials to be used (a) suitable for the intended use and (b) safe and without risks to health if used in accordance with instructions given?
- So far as is reasonably practicable, is the working environment safe, without risks to health and adequate as regards facilities and arrangements for the welfare of the worker?
- In relation to the work to be carried out, have all reasonably foreseeable hazards been identified, risks assessed and, so far as is reasonably practicable, arrangements made to eliminate or minimise them?
- Has the worker been provided with protective clothing and personal protective equipment (e.g. eye protection, footwear etc.) as necessary and been instructed in its use?
- Have appropriate arrangements been made for the transportation of equipment and materials to and removal of waste materials from the work site (if necessary)?
- Have arrangements been made to inspect the work site on completion of the work to ensure, so far as is reasonably practicable that it is safe and without risks to health?
- Has an emergency action plan been prepared and have all necessary arrangements been made to put it into effect should an incident occur?

## **Safety in the Research Laboratories**

The Health and Safety policy of the School of Physical Sciences applies to all personnel within the areas covered by the School. This includes staff, students and visitors. The following guidelines apply specifically to all personnel (including staff, post doctoral and postgraduate students, visiting researchers and undergraduate project students) who are **authorised** to enter and work within the School's research laboratories.

### **Responsibility**

Executive responsibility for health and safety within the School rests with the Head of School. Within each research area responsibility for ensuring a safe working environment rests mainly within the research supervisor or the person in charge of the laboratory. However *all research workers have a responsibility not to endanger themselves and others by their actions or omissions.*

### **Authorised access to Research Laboratories**

Access to each individual research laboratories 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 or new staff the research supervisor is responsible for ensuring that the appropriate safety training is provided before laboratory access is authorised. This training must include emergency procedures such as fire or accidents/spillages. It will also include training in the use of personal protective equipment, risk assessments of laboratory procedures and safe systems for working on the appropriate laboratory equipment.

Laboratories which contain specific hazards (e.g. lasers, radioactive materials, chemical hazards etc.) must be clearly marked with identifying notices, which strictly limit access to designated personnel with appropriate training and expertise.

### **Working in Isolation**

Working in isolation (i.e. in the absence of close supervision or nearby colleagues) is always potentially hazardous. Please refer to DCU's Policy on "Out of hours working"

### **Laboratory Environment and Practice**

All researchers have a responsibility to maintain a tidy, well-organised and safe laboratory environment with a safe means of rapid access and egress from all working areas.

All experimental systems should be designed to be inherently fail-safe.

All researchers should carry out detailed routine assessments of the likely hazards and risks associated with their experimental systems and procedures. Research supervisors have a responsibility for ensuring that such assessments are documented and that systems and procedures meet the appropriate safety standards. Research supervisors must keep written records of risk assessments carried out and provide, where necessary, appropriate written work instructions including emergency procedures and additional written local safety rules. If in doubt contact the School Safety advisor

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

Researchers must not attempt new procedures or tasks without carrying out a risk assessment; consulting their supervisor and receiving appropriate safety training.

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

All systems, which operate beyond normal hours, must have a **shut down procedure**, which includes a contact number for emergencies. This procedure **must be clearly displayed** beside the experimental system.



## School of Physical Sciences

### UNDERGRADUATE PROJECT RISK ASSESSMENT

1. This project risk assessment must be completed by the student and approved by their Supervisor before any work can commence. Once completed, the risk assessment form must be handed in to the Departmental Safety Officer, Alan Hughes, room N102 for record keeping.
2. One copy of the project risk assessment should be kept by the student, in their Laboratory Log book and one copy by the Supervisor.
3. The document must be completed for all projects, whether the project is desk based, laboratory based or off site.
4. Risk assessments should be reviewed, and where necessary revised, at least once every 12 months, and whenever there is a significant change - even if this is a continuation of the project.

#### Section 1. How to complete the risk assessment form

This Risk Assessment Form consists three parts and is to be completed (legibly) as follows:

- i) The student is to complete all the boxes in early part of **Section 2**[page 3 of 5], including:  
Title of project, Description of project, Supervisor details.
- ii) The student must then complete **hazard identification** with help from the Supervisor.  
This will identify any hazards associated with the project;

Those doing software projects may think it is unnecessary to do a risk assessment for a software project but (a) there are hazards associated with use of VDUs and injuries such as RSI and (b) it is part of your professional training because you may in future need to look after your own and other people's safety.

The student must then complete the risk assessment with the help of the Supervisor. The purpose of this task is to identify control measures and codes of practice that will reduce the hazard risk that may be present;

Additional information and factors to be considered when filling in this form and may be found at the following web sites:

Physics Department <http://www.dcu.ie/physics/safety/safetystatement.pdf>

In particular the sections on *Safe systems of work: Guidance* and *Safety in the research laboratories* should be read carefully.

DCU <http://www.dcu.ie/safety/index.shtml>

- iii) The student and Supervisor both sign the Declaration at the end of the risk assessment.  
Give the signed original to the Department Safety Officer N102.  
The student and supervisor should each keep a copy of this form
- iv) The final section is for use by the Department Safety Officer only once the risk assessment is completed and submitted.

#### Section 2 The Risk Assessment form

This is to be researched and completed by the project student with the help of the Supervisor

#### Section 3 For Department Safety Officer & records

This is to be completed and signed by the Department safety officer

## Acknowledgement



This form is based on the Risk Assessment Form of  
Department of Electronic & Electrical Engineering  
University College London

**School of Physical Sciences DCU**  
**UNDERGRADUATE PROJECT RISK ASSESSMENT**

**PERSONS INVOLVED**

Name of student

E mail

Year

Do you have any special needs?

Name of Supervisor

E mail

Room n°.

Phone n°.

**PROJECT TITLE**

Start date

Approximate duration

**DESCRIPTION OF WORK**

**LOCATION(s) where the work will be carried out**

*For example: room no, laboratory no., building*

**HAZARD IDENTIFICATION** - *use this section to list the hazards associated with the project*

*For example: chemicals, lasers, UV light, soldering, high voltage, VDUs*

**RISK ASSESSMENT** - *make an assessment of the risks of the hazards listed above state high, medium or low risk*



**CONTROL MEASURES** (use this box to specify the control measures that will be implemented to control the risks arising from the work)

*For example: personal protective equipment (PPE) laboratory lab coats, gloves, and safety glasses  
local air extraction  
codes of practice*

**DECLARATION**

We the undersigned have assessed the work, titled above, and declare that there is :  
no significant risk(s) / the risk(s) will be controlled by the methods stated on this form (delete as applicable) and that the work will be carried out in accordance with Departmental and University safety codes of practice.

If it becomes clear that additional control measures / codes of practice / method statements required, the student and Supervisor will undertake an additional risk assessment.

Signature of student(s) \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_ Date: \_\_\_\_\_

Signature of Supervisor \_\_\_\_\_ Date: \_\_\_\_\_

### Section 3.

Send this original document to the Departmental Safety Officer for counter signing and for record keeping.

Make copies as required for student, supervisor and other relevant parties.

<u>Department Safety Officer</u>	
Name	Signature
<b>Alan Hughes</b>	
Date :	
Room number: N102	E mail: alan.Hughes@dcu.ie
Comments	

<b>School of Physical Sciences Risk Assessment Form</b>
---

**1. Laboratory and Personnel Details.**

Building / Room Location	
Academic Supervisor / PI	
Lab Supervisor	
Other Personnel	

**2. Brief Description of Work/Activity.**

--

**3. Brief Description of Equipment used (if applicable).**

Equipment Name	
Manufacturer	
Model	
Serial Number	

**4. Hazards / Risk. (List hazards / risks associated with Equipment / Procedure)**

Description of Hazard	Description of Control Measures

**5. Risk Assessment.**

Comments:	Low	Medium	High
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**6. Are existing control measure adequate      Yes ☐      No ☐**
**7. If NO then list Additional Control Measures Requires.**

Description of Hazard	Additional Action / Control Measures	Action By

#### 8. Additional Comments

--

#### 9. Emergency Contact Details

	1 <sup>st</sup> contact	2 <sup>nd</sup> Contact
Name		
Office Number		
Ph: (daytime)		
Ph: (out of Hours)		
Mobile		

#### 10. Signatures

	Name:	Signature	Date
Form Completed by			
Academic /PI			

**Blank  
Page**

# Appendix 4

## Health & Safety Policies / Procedures School of Physical Sciences

Changing bottled gas in gas stores	P 63
Gas cylinder Lift	P 64
Using Gas Cylinders in Block II	P 65
Safe use of Piped gas	P 66
SOP Physics Recycling of Winchester Bottles	P 67
DCU Chemical Glass Disposal Policy	P 68
Physics Clean Certification & SOP Letter	P 69
Cryogenic Liquid Handling	P 70
Accessing roof space	P 72
Evacuation of Block II in the event of Fire	P 73
Guidelines for use of Hydrofluoric Acid	P 74
Waste disposal policies in School	P 76
Ambulance call procedure	P 77

# Procedure

## Changing over a gas cylinder in central gas store

### OVERVIEW

Changes to the piped gas system should always be left to the trained technical staff unless absolutely necessary.

You must be appropriately trained in gas cylinder safety, gas cylinder handling and gas regulators.

You must be familiar with the piped gas system for Block II. You may only change valves and cylinders on those manifolds marked **BLOCK II** and must not interfere with the piped gas system for the **Research and Engineering Building**, which is also housed in the same caged gas area.

If you feel that uncomfortable with any part of this operation, then you should not attempt to make any cylinder or piped gas system change. For example if you feel nervous, unsure or are worried that you would not be physically strong enough to safely carry out a cylinder change then STOP. Do not attempt any changes.

### PROCEDURE

- 1 Sign out the key from: Physics Mail Room N144
- 2 Leave the empty cylinder connected. All the manifold connections have non return valves. If there is a full cylinder on standby, it should be put on line by turning the cylinder valve on. If the new cylinder is on the other side of the manifold / piped gas regulator then it will also be necessary to turn on the valve at this manifold.  
No more than two turns are required from the fully closed position to open a valve.
- 3 Do not to change cylinders, except in the case where there is NOT a full cylinder already attached to the piped system. In this case
  - Store the empty cylinder safely
  - Secure the full cylinder to the piped system and put it on line.
- 4 Send an e-mail to all the following people who are responsible for maintaining piped gas.  
**alan.hughes@dcu.ie**  
Include the following information in this e-mail
  - A record of what you did
  - The current status of cylinders
    - No. full
    - No. empty
    - No. full & connected

This information is needed for stock control so that cylinders can be re-ordered when necessary. If you cannot send an e-mail then please pass a written note with this information onto one of the above.

Ver 4.1 June 11

# **PROCEDURES**

## **OPERATING GAS LIFT**

Version 2.2 Nov 2015

### **General Safety**

- Only those who are trained and have been authorised may use this lift
- If you do not feel competent or comfortable using this lift then you must not operate it
- A list of authorised people is kept with security
- The key for operating the lift [Key Ring #97], is to be signed out from security and returned immediately after use
- Gas cylinders and other equipment must be secured safely when using the lift
- Any malfunction, damage or safety issue must be immediately reported to Estates
- This lift is intended for gas cylinders and equipment only. People should not travel in it.

### **General Lift Information**

- The lift is operated from the bottom at the gas stores
- The bottom door can only be open when the lift is full lowered and is at the bottom level
- The upper gate can only be opened when the platform is fully at the top
- The lift can only operate when both the top gate and the bottom door are fully closed

### **Operating the Lift**

1. The main power must be turned on by turning on the rotary power switch
2. The lift must be enabled by turning on the main on/off switch at the lower lift controls using the small 'RO 2O' Key  
This key must be left in this switch for the lift to operate and to allow doors and gates to be opened
3. When the door & gate are fully closed, then the lift may be sent up using the "up arrow" button or down using the "down arrow" button. [The lift gives a little jerk half way up and halfway down. Keep the button pushed to fully raise or lower the lift]
4. With a second RO 2O key it is possible to operate the lift from the top gate switch
5. The lift should be left at the bottom when not in use



## **Procedure for using gas cylinders inside Block II**

### **What we do**

- All cylinders are ordered through the Senior Technician [ST] using a single Physics account number
- Research groups requiring cylinders in Block II also use this account number, and are charged for the cost of the gas and every 3 months for cylinder rental.
- Undergraduate and technical workshop gas use in Block II is charged to Physics
- The ST keeps an accurate record of all cylinder deliveries and returns.
- The ST regularly verifies cylinder record in cages by a physical audit.
- The ST regularly updates cylinder type/size/location inside building by a physical audit. This inventory is kept in an Excel sheet and is posted on the Physics WEB site

### **Dos & Don'ts for ALL users**

- Only trained competent people may use gas cylinders in Block II
- Do not travel in a lift with cylinders
- Cylinders are heavy and dangerous when moving them. Use a proper trolley and only if you are comfortable and competent doing so. Ask for help
- If there are location changes to any cylinders or cylinders are brought in from other sources then the ST must be informed immediately so that an up-to-date inventory can be maintained
- There should be no unnecessary gas cylinders in the building. Use the piped system where possible and remove unused cylinders to the cage storage area

## **Safe Use of Piped Gasses**

Ver 1.1

November 2015

- Only trained & competent persons may use the piped gas system.  
If unsure, you must stop and ask for training & advice from your supervisor, manager or P.I.
- The user must be aware of the chemical, physical & other risks associated with the gas being used.
- The user must be aware of the hazards & risks associated with a pressurized gas supply
- The user must be fully aware of any hazards that their use of gas may accidentally or directly impose on other laboratory users
- When not in use, the gas must be closed off using the small knob on the supply pipe  
It is NOT sufficient to adjust the regulator to near zero
- The outlet gas pressure is adjusted by turning the large knob on the front
  - clockwise                      increases the supply pressure
  - Anti-clockwise                decreases the gas pressure

# SOP

## **Cleaning and Recycling of Glass Winchester Bottles**

Completely empty the bottle of all chemicals

Remove all labels other than those that came with the bottle

Manufacturer's labels may be left on the bottle

I.e. remove information labels stuck on by the user

For solvent bottles:

Rinse with acetone and leave to evaporate inside a fume cupboard overnight

For bottles that contain water soluble chemicals e.g. acids & bases:

Rinse thoroughly with water only

Then triple wash each bottle with hot water

Clearly mark each bottle as having been cleaned by either

Removing the manufacturers Label

Drawing a clear line with a marker through the label and other hazardous information

Bring the cleaned bottles to the departmental Safety Advisor who will verify that the container has been correctly cleaned, washed and labels defaced.

He/She will then arrange to have it placed in the recycling bin

### **VERY IMPORTANT**

All waste chemicals must first be disposed of appropriately

This is NOT a waste chemical disposal service

This service does NOT apply to plastic chemical containers

Only cleaned glass bottles will be disposed of

Contaminated / dirty bottles will not be entertained

## DCU Chemical Glass Disposal Policy

Thorntons Recycling can collect and dispose of glass bottles which have been used for the storage of solvents/ acids or alkalis, once the bottles have been made safe. Lockable bins will be provided to schools and research centres in the following areas:

- Science Building Service Yard (3 x 1,100ltr bin) - ICNT/ H&HP, Biotechnology and Chemical Sciences
- NRF Service Yard (1 x 1,100ltr bin) - NRF/ NICB/ NCSR/ BDI
- Physics -1 x 240ltr bin

Any school/ research centre who wish to dispose of their glass bottles must first furnish the Estates Office with a letter to guarantee that all such bottles will be made safe and will be free of harmful solvents/ acids/ alkalis, i.e. after they are thoroughly treated to eliminate traces of the liquid stored within. The SOP detailing the process for making the bottles safe should also be attached. This letter will then be passed on to Thorntons.

Once this is in order, Thorntons can then accept the bottles in the glass stream. The labels do not have to be removed. However, the treated and safe glass bottles must then be marked with a marker through the hazardous labelling before placing in the glass bin. Schools and research centres should have a designated person/s charged with placing the bottles in the bin assigned to their unit.

These bins must never be used for the disposal of pasteur pipettes or other sharps.

## ***Physics Clean Certification & SOP Letter***

4<sup>th</sup> December 2015

**From :**

Alan Hughes  
Safety Advisor  
School of Physical Sciences  
Dublin City University

**To:**

The Estates Office  
Dublin City University

**Re: Recycling Waste Glass Chemical Bottles**

Dear Sir/Madam,

The School of Physical Sciences, Dublin City University would like to take advantage of the disposal service for Waste Glass Chemical Bottles provided by Thornton's Recycling, organised in conjunction with the Estates Office, DCU.

In doing so we guarantee that all bottles placed in our assigned bin will be made safe and free from any harmful chemical reagents. We have a strict cleaning policy within our School and a Safe Operating Procedure [SOP], detailing our cleaning procedure for bottles has been put in place, a copy of which is attached to this letter.

Furthermore all empty bottles will either have their labels removed or be clearly marked through with a marker to indicate that they have been made safe for disposal.

To ensure compliance, there will be only one designated person, the School Safety Advisor, who will be in charge of placing empty bottles into this locked container

Yours Sincerely,

-----  
Mr Alan Hughes  
School Safety Advisor

-----  
Dr Jean Paul Mosnier  
Faculty Occupational Health and Safety Committee

-----  
Prof. Enda McGlynn  
Head of School of Physical Sciences

# **Guidelines**

## **Handling of Cryogenic Liquids**

Examples of Cryogenic Liquids in use in the School of Physical Sciences are Liquid Nitrogen and Liquid Helium. Both have similar cryogenic properties and expand from liquid to gas with a volume increase of ~ 700

Liquid Nitrogen is a colourless, odourless liquid similar in appearance to water. It has a boiling point of -195.8°C.

Liquid Helium is a colourless, odourless liquid. It has a boiling point of ~4°K or ~ - 270°C. When it evaporates it is much lighter than air and may collect in ceiling voids

### **Hazards**

- The extremely low temperature of these liquids can cause severe burn-like damage to the skin either through contact with the liquid, surfaces cooled by the liquid or the evolving gases. The hazard level is comparable to that of handling boiling water.
- The low temperature of the vapour can cause damage to softer tissues e.g. Eyes and lungs but may not affect the skin through short exposure.
- Skin can freeze and adhere to surfaces, which have been cooled by cryogenic liquids. This may lead to tearing of skin on removal.
- Soft materials such as rubber or plastics become brittle when cooled by such liquids and may shatter unexpectedly.
- Large volumes of gas are evolved from small quantities of liquid nitrogen or helium.
- This is a serious potential hazard in poorly ventilated areas where such evaporation can easily lower the concentration of Oxygen in the air. Asphyxiation can occur and unfortunately lethargy is a sign of lack of oxygen.
- Thermal stress damage can occur in vessels because of the large, rapid changes of temperature
- Oxygen may condense in containers, which are leaky or open to air, and where a higher than normal concentration of Oxygen has been generated there is the real danger of explosion or accelerated combustion of normally inert material
- Additionally such external chambers can then explode on heating up due to rapid generation of gas in a contained volume.
- Pay particular attention to locations where ice builds up.

### **Handling of cryogenic liquids**

- Only use containers, fittings and such which have been designed for use with cryogenic materials. Never use food type vacuum flasks as they may implode or explode.
- Always use personal protective equipment when handling such liquids
- Avoid skin contact with either liquid nitrogen/helium or items cooled by liquid nitrogen as serious burns may occur
- Always use cryogenic liquids in a well ventilated area especially when filling a warm container
- Never travel in the lift with a Cryogenic liquid dewar

## **Storage of Cryogenic Liquids nitrogen**

Liquid nitrogen is routinely stored in 25 litre Dewar in research laboratories

Occasionally Liquid helium is used in research laboratories. It is imported in its own container and is stored in the laboratory suite in which it will be used

## **Training**

**Undergraduate laboratories:** Students must be instructed in the correct procedures by an appropriate member of staff before using liquid nitrogen in any practical or project.

**Research laboratories:** New users of liquid nitrogen should receive instruction in its use from experienced members of the academic, postgraduate or technical staff.

# Procedures & Regulations

## Roof Access

Version 2.2      February 2005

- The key for accessing the roof shall be kept by security and only signed out to a staff member who is familiar with these procedures [Students may not have direct access to this key]
- Because of the inherent dangers, access shall be restrict to “only when absolutely necessary”
- All Staff & students must be clearly shown the appropriate procedures for roof access and they must agree to abide by these before permission is given to go onto the roof
- Under no circumstance shall any person go nearer than two meters from the roof edge
- Due care shall be taken when
  - Climbing the stairs
  - Proceeding from top of stairs over the wooden causeway to the roof exit door
- Great care shall be taken to ensure that nothing falls off the roof onto the public areas below
- Due care shall be taken to ensure that no damage is caused to the roof surface and equipment in the roof plant room

## **Dangers**

- Fall from roof
- Bang head when walking on wooden gang way
- Fall down stairs / ladder
- Injury or medical condition while alone
- Dropping something off the roof onto people / equipment below
- Damage to roof surface & plant room equipment



# Procedures

## Fire evacuation of Physics

September 2008

### The evacuation procedure is as follows

- Fire wardens should check all rooms; it is assumed that if a door is locked, then the room is unoccupied.
- It is not always possible to check rooms that have magnetic locks & key-pads. In a serious case [where there has been a double knock fire alarm system], all magnetic doors will open automatically.
- Where possible, deputy fire wardens will be appointed in each area who automatically take over if the principle fire warden is absent.
- When the building has been evacuated fire wardens should communicate with each other to ensure that all areas have indeed been checked & cleared.
- Public areas such as toilets & lift should be checked
- Laboratories will normally be cleared by the academic in charge of the practical
- The fire assembly point is **Fire Assembly point #5** . All those evacuated from the building should go to this assembly area away from the main foyer doors.

### **General notes / comments**

The lift must not be used in the event of a fire.

Stairwells are temporary fire safe areas [Wheel chairs]

Department safety advisor should be informed of new department members with fire safety implications or evacuation requirements. Wardens should be made aware of these needs

Fire Wardens should be competent and confident in handling an evacuation

- Insist on immediate and unconditional evacuation
- Show leadership
- Wear yellow bibs
- When everyone is outside, they should ensure that crowds are kept clear of the doors and building
- The fire assembly point [number #5] is to the right when exiting Block II from the main Foyer

For farther information, visit the following DCU sites

<http://www.dcu.ie/safety/index.shtml>

<http://www.dcu.ie/safety/pdfs/evacuation.pdf>

<http://www.dcu.ie/safety/wardens.shtml>

In the event of a fire staff should . . . .

Fire warden duties

Old list of Fire Wardens

# **Guidelines**

## **Handling of Hydrofluoric Acid**

Hydrofluoric acid is an extremely hazardous chemical, which has a boiling point of 19.5 C and therefore fumes at room temperature. It is labelled with risk phases:

- R26/27/28: very toxic by inhalation, by contact with skin and if swallowed
- R35: causes severe burns

Hydrofluoric acid has a number of properties, which make handling and usage particularly difficult.

- HF attacks glass, concrete, some metals and organic compounds
- HF is rapidly absorbed through mucous membranes and through the skin. Contact of anhydrous HF and concentrated solutions of HF with skin causes severe burns, which are immediately painful.
- Dilute solutions may not cause immediate pain but can penetrate through the skin and cause deep burns as the fluoride ions migrate through and damaging the tissues until they are eventually taken up in the bones. HF damage results in long-term pain, ulcers and burns, which are slow to heal.

### **Precautions**

- Procedures using hydrofluoric acid must never be attempted by an untrained person
  - Procedures using hydrofluoric acid must never be attempted outside of normal working hours
  - Procedures using hydrofluoric acid must never be attempted by someone working alone
  - Before starting to work with HF an antidote gel must be obtained from the school safety advisor
- Alan Hughes
- Reference must be made to a current MSDS sheet, obtainable from the school safety advisor
  - An appropriate First Aider must be informed
  - All procedures must be carried out in a fume hood
  - Such areas must be thoroughly clean after HF use.
  - Appropriate personal protective equipment must be worn i.e. Safety glasses (or face shield), PVC or Neoprene gloves which must be regularly checked for damage (even pinholes), lab coat and preferably a chemical proof apron.
  - Hydrofluoric acid, no matter the quantity, must always be stored in a secure acid safety cabinet

### **Disposal**

Unless large quantities (>10mole) of HF have been used, spent acid is best added slowly to a copious flow of water running down a drain. The flow of water must be continued for some time after to ensure that all the acid has been cleared.

## **Emergency procedures**

### **Skin or eye exposure**

Immediately wash with large amounts of water. Call for First Aid. Even if no pain is present, affected areas must be treated with calcium gluconate gel. Seek medical attention for all exposure to HF.

### **Spillages**

- Small spillages (100 ml or less or <10% solutions) can be neutralised with sodium carbonate or sodium hydroxide solution. Full personal protection must be worn.
- Large spillages. Immediately contact both the school safety advisor **and** the Safety Advisor, School of Chemical Sciences through the Technical Officers' office in that School

## Procedure for the safe removal and disposal of waste in the School of Physical Sciences

### **Waste disposal policies in School of Physical Sciences (Spring 2018)**

- A significant amount of Physics waste can be dealt with in the WEEE collection - all electronic and metal waste [including table frames] can go into this every three months. Alan Hughes can advise.
- Plain unprocessed wood such as palettes will be collected by arrangement with Estates Office. Alan Hughes can advise (note that chipboard & formica table tops are NOT collected by Estates, please see final point below)
- Large paper clear outs [say of an office] are dealt with by requesting a green recycling bin. Alan Hughes can advise.
- Large cardboard boxes and packing will be dealt with by the cleaners, and should be left outside the building every evening.
- Styrofoam packing, while not recyclable, once bagged and left outside the building, will be removed by cleaners.
- There is a glass recycling bin behind the wooden fencing at the side of the DCU Sports Centre which can be used for non-chemical related glass.
- There is a clothes bank at the side of the DCU Sports Centre.
- Glass demi-johns and other HDPE chemical containers, once thoroughly cleaned and made safe, can be disposed of by arrangement with Alan Hughes.
- Each laboratory should have its own sharps waste container and Alan Hughes can advise on procurement of same

**Other types type of waste** such as damaged furniture, table tops and chairs should be collected and temporarily stored safely locally (i.e. not left out in corridors).

Alan Hughes is to be informed about this waste and the School of Physical Sciences will order a skip to deal with such waste periodically.



## Procedure for requesting Emergency Ambulance Assistance on DCU Campus

1. **Dial 7999** from any internal phone or 0 (for outside line) then 999 – you will be connected to the emergency services directly
2. Ask for an Ambulance to attend Dublin City University Campus, Collins Ave, Dublin 9. Specify which building the casualty is in (Henry Grattan, Sports Complex etc).
3. Request that the ambulance enter the Campus from Collins Avenue and report to DCU Main Reception where security will be await its arrival.
4. Dial 5999 (DCU Security Emergency Line) and notify Security that an ambulance is on its way. Inform Security which building (and which room in the building) the ambulance should attend.
5. Security will meet the ambulance at Reception, open the access barrier for it and accompany it (or direct it, if after hours) to the designated building.
6. If possible have someone wait at the entrance to the building to take the ambulance personnel directly to the casualty

# **END OF SAFETY STATEMENT**

**February 2018**