

Letterkenny Institute

***of***

***Technology***

**Ancillary Safety Statement**

**for the**

**School of Science**

**(including Science, Computing, Nursing and Health Studies** **and Research)**

*This Ancillary Safety Statement is part of a package which includes*

*A Parent Safety Statement*

*and*

*Ancillary Safety Statements*

*for*

*The School of Engineering*

*The School of Business Studies*

*The School of Science (including Science, Computing,*

*Nursing and Health Studies and Research)*

*The School of Tourism*

*Estates*

*Sports Centre*

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# Introduction

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 employers and employees in all types of work and embraces all the activities of the Letterkenny Institute of Technology.

The Act requires the employer to prepare a written Safety Statement describing the employer's arrangements and the employee co-operation necessary to provide a safe workplace.

In response to this requirement, the Letterkenny Institute of Technology has prepared a *Parent Safety Statement* describing management's safety programme and employee co-operation. In recognition of the diverse working activities within the institute *Ancillary Safety Statements* have been prepared for different functional areas.

Consequently, the Institute’s overall Safety Statement comprises of the following documents:

* Parent Safety Statement
* Ancillary Safety Statement - School of Business Studies (including Department of Design)
* Ancillary Safety Statement - School of Engineering
* Ancillary Safety Statement - School of Science (including Science, Computing, Nursing and Health Studies and research work in the Post Graduate laboratories)
* Ancillary Statement – School of Tourism
* Ancillary Safety Statement – Estates
* Ancillary Safety Statement- Sports Centre

Provisions, which apply across the institute, are included in the Parent Statement. The separate Ancillary Statements give details particular to these areas of activity and include the relevant Risk Assessment and Control Measures, Safe Work Practice Sheets and Laboratory Rules arising from their specific activities.

***1. The School of Science***

There are approximately 115 employees and 2200 students in the School of Science at time of revising. The Ancillary Safety Statement for the School of Science must be read in conjunction with the Parent Safety Statement so that all the work activities are covered.

***2. Organisations and Responsibilities***

The overall assignment of responsibilities and the identification of “*responsible persons”* are detailed in the Parent Statement.

The *“responsible persons*” in the School of Science are

1. Dr. Gertrude Taggart, Head of School of Science
2. Dr. Joanne Gallagher, Head of Department of Science
3. Dr. Louise McBride, Head of Department of Nursing and Health Studies
4. Mr. Thomas Dowling, Head of Department of Computing.

***3. Risk Assessment Record and Control Measures***

Hazard identification and risk assessment methodology is dealt with in paragraph 3 of the Parent Statement.

While recognising that a safety audit cannot identify every single hazard, a safety audit of each of the sub-units in the School of Science will be carried out annually to reduce the overall risk from hazards.

The general hazards currently identified in respect of the School of Science are listed in the risk assessment record forms in Appendix 1. These are risk assessments for the entire School of Science covering all departments.

Lecturers and Technical Officers conduct specific risk assessments for all practical and research work carried out in the laboratories of the Department of Science. This risk assessment process is to be completed for all current practical class/research activity and any new practical class/research activity that may be developed, prior to the practical class/research activity taking place. The specific risk assessment is comprehensive and covers the entire aspect of the practical/research including preparation work carried out by technical officers and refers to the relevant MSDS where chemicals are used. This process will include risk assessments for project work and research work. A list of the courses for which specific risk assessments have been prepared is given in Appendix 2.

Each and every employee must follow fully safe work practice procedures described in the Safe Work Practice Sheets. A list of the SOPs and information available to permit safe practice of work is given in Appendix 3.

To deal with possible hazards laboratory safety rules have been drawn up. These general Laboratory Rules and Safety Regulations for Biochemistry laboratories, Microbiology laboratories and Veterinary Nursing, Dental Nursing labs and Therapy labs and are appended to this Ancillary Safety Statement as Appendix 4.

# Appendix 1: General Risk Assessment & Control Measures

These risk assessments are conducted for the entire School of Science taking account of all the Departments.

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 1

**Date last updated**: 2020

**SECTION: School of Science**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

|  |  |  |  |
| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories  Computer Laboratories,  Nursing areas,  Research areas. | **Fire**  Fire is a universal hazard in any work environment. Any outbreak of fire has the potential to cause injury or death. The major dangers are smoke inhalation, noxious fumes, and burns. | H | The Institute has developed a detailed response to this hazard in it’s ***Fire and Emergency Safety Management Policy*** which can be found in Appendix 5 of this document. |

**RISK EVALUATION:** H-High, M-Medium, L-Low

***GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES***

Form No. 2

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

|  |  |  |  |
| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories  Computer Laboratories,  Nursing areas,  Research areas. | **VDUs**  Computer equipment is in use in all sections of the School, in the administration offices, in staff offices and in the laboratories. Visual display units and keyboards can lead to stress and strain where they are not ergonomically set up. Hazards may arise due to the siting and location of display screen equipment, inadequate ventilation, glare, lack of adjustment for, desk and chair design, etc | H | All new office equipment shall meet E.U. directives for ergonomic performance as indicated by S.l. 299 of 2007.  The Institute undertakes to analyse all workstations to evaluate Safety and Health risks, to take appropriate measures to minimise risks found, and to ensure that work is planned to provide breaks or changes in activity.  Appropriate eye tests will be offered to regular users of VDU equipment  Refer to Parent Statement. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 3

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

|  |  |  |  |
| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories  Computer Laboratories,  Nursing areas,  Research areas. | **Electricity**  Faulty or incorrectly used electrical equipment can lead to fire hazards. | H | All equipment should be ventilated and properly fused  All circuits for portable equipment are protected by sensitive (30mA) ELCBs |
| Science Laboratories  Computer Laboratories,  Nursing areas,  Research areas. | Electrical shock. | H | All equipment must conform to industry standards. BS. 415. BS7002 or better.  Portable electrically operated equipment should be visually inspected before each use, checking leads, connections, enclosures and plugs for damage.  Damaged plug tops must be replaced by a competent person e.g. the Institute Electrician or any competent Technical officer.  All equipment to be maintained as per manufacturer’s recommendations and maintenance log kept.  Portable electrical equipment has been tested where required by manufacturers or where it is subject to heavy wear and tear. |
| All areas | Trailing leads can cause tripping accidents | M | All leads, power and printers should be properly routed. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 4

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

|  |  |  |  |
| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories  Computer Laboratories,  Nursing areas,  Research areas. | **Faulty Equipment**.  The use of faulty equipment may result in electric shock , burns, fire ignition and explosion | H | All equipment should be visually inspected by the person using it before each use.  Faulty equipment must not be used and should immediately be reported to the responsible person. Repairs to faulty equipment must only be carried out by a competent member of staff.  Standard operating procedures to be followed for laboratory equipment. |
| Science Laboratories  Research areas. | Eye injuries from demonstrations or experiments | M | Safety goggles should be worn at all times. See Laboratory Rules and Safety Regulations. Eye wash stations have been provided in selected laboratories. |
| Science Laboratories  Research areas. | Laser beam equipment causing burns or damage to eyes | H | This equipment is only used by a responsible person and stored safely when not in use. See Safe Work Practice sheets. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 5

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

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| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories,  Research areas. | **Chemicals.**  A 'chemical' will be regarded as any substance, (solid, liquid, aerosol or gas), which is used for the purpose of reacting with or effecting a change in another substance or material. This definition extends beyond the narrow context of laboratory use and embraces the broadest possible interpretation. It includes such substances such as solvents, cleaning fluids, detergents, glues/resins, drain cleaners, paint strippers, preserving fluids as well as chemical reagents. A wide spectrum of chemicals is in use within the School; they range from (seemingly) harmless,-readily available substances to highly specialised and reactive laboratory reagents.  Examples of the main hazards arising from contact with chemicals are:  Acute or chronic poisoning resulting from ingestion, inhalation or absorption through the skin. Chemical burns. Some chemicals may cause cancer, cause genetic changes in a cell, interfere with the normal development of the foetus, cause dermatitis or respiratory problems, detonate or ignite under certain circumstances either spontaneously or under the influence of another event..  Risk will depend on the individual chemicals in use, the quantities involved and the circumstances under which they are being used. As a consequence it can only be realistically assessed on an area by area basis and by reference to the MSDS | H | Material Safety Data Sheets  The School has published 2 policy documents on this hazard :   1. Chemical Storage and Use Appendix 6 2. Segregation Guidelines for Hazardous (Chemical) Waste Appendix 7   **R and H phrases**   |  | | --- | | From 1 December 2010, all pure substances must be classified according to the CLP rules.  In principle, this means that the available data for each individual substance must be  evaluated according to the new classification criteria. |  |  | | --- | | To ease the workload for the companies, the legislation includes a translation table, which  may be used for substances, which have already been classified according to the old rules  and placed on the market before 1 December 2010. Until 1 June 2015, the table may also be  used for substances and mixtures, which have already been classified according to the old  rules and placed on the market. |  |  | | --- | |  |   **Please use the website below to translate R phrases to H phrases**;   |  | | --- | | <http://ghs.dhigroup.com/PagesGHS/TranslationTool.aspx>  Type in an R-phrase and see which CLP classification it can be translated to. The  classification consists of a hazard class, a hazard category and a hazard statement  (H-statement). You will also be informed which of the new hazard pictograms belongs  to the classification. | |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 6

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

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| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories  Research areas. | **Biological Hazard** --  “Biological" may be defined as dealing with all living matter and its derivatives. This also includes all genetically modified organisms and cell cultures. The term extends beyond the narrow confines of the laboratory and embraces the broadest possible interpretation. It includes all animals, plants, fish and microorganisms as well as their components and tissue extracts. Samples of human origin are also included. The dangers of exposure to biological material can vary depending on its pathogenicity, toxin producing ability or a combination of both. This can lead to a wide variety of  a) allergic reactions  b) poisonings  c) diseases  From a bio-safety point of view, laboratory equipment may also be classified as  (a) Equipment that may create a hazard when used, or  (b) Safety equipment specifically designed to prevent or reduce microbiological hazards.  The areas within the Institute where these risks exist are primarily the laboratories of the microbiology  and biochemistry section and in the Research labs. This exposure can be in a variety of ways i.e.  working with samples, transport of materials, disposal of materials, storage of materials as well as  accidental exposure. Microbiological Laboratories are special work environments which may pose a  heightened infectious disease risk to persons in or near them. | H | In working with samples of living material it is essential, particularly when the source is unknown, that all samples are managed according to International Bio-Safety Standards. It is therefore, essential that good laboratory practice and containment regulations (where appropriate) will be followed at all times. Restricted access areas will also be strictly enforced and all non-technical support staff will be trained and educated in the various rules and regulations pertinent to basic laboratory safety measures. Where necessary, supplementary procedures shall be introduced at local level to deal with specific situations.  No students will be allowed to work with biological material without direct supervision by qualified staff. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURE**

Form No. 7

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

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| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories  Research areas. | **Gas Hazard**  The term 'gas' includes both fuel gas and special gases used for laboratory, workshop and other purposes. A gas system is defined as any permanent installation or mobile facility used to deliver or store the gas. Gases can be flammable, explosive, toxic and corrosive; Even inert and seemingly safe gases such as nitrogen, argon and helium, which are used within the School, could, under certain circumstances, cause suffocation through displacement of oxygen in the atmosphere. In practice they are stored and delivered at the point of use under positive pressure and this creates a natural propensity for leakage. The weight and size of high-pressure gas cylinders can cause injury unless these cylinders are restrained. Gas can therefore present a hazard not merely to those using them but also to persons carrying cylinders and to others in the vicinity. Because gases are stored and delivered under positive pressure and because their use involves valves, joints, pipe work, etc. there is always a risk of leakage. Leaks can cause freeze burns in addition to explosive hazards. The risk will largely depend on the standard to which the delivery system has been constructed and is protected from damage or interference. The risk to those in the vicinity of a gas leak will depend on the nature of the gas (toxic, flammable, corrosive) the extent of the leak, the extent to which the gas can disperse into the outside atmosphere and the procedures introduced to deal with the possibility of such an incident. | H | To minimise the risk to staff and others associated with the use of gases in the Institute a Safe Work Practice Sheet relating to fuel gases has been prepared.  Gas cut-offs have been fitted to each laboratory, some of which also contain gas-leak alarms. Laboratories 3702, 3703 and 3709a have gas detection systems in place with display panels and alarms located in RM3703. Gas lines are pressure tested annually.  Propane gas proving system tests for pressure drops to determine if there are any leaks. Each time the main propane supply is turned on, the system tests the pressure. Staff using laboratories should turn the main propane gas supply off after each practical and at end of the day. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 8

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

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| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories  Nursing areas,  Research areas. | **Physical hazards**  Cuts, infection or serious injury from broken glassware | H | All cuts must be given first aid attention by qualified personnel (see first aid list on all first aid cabinets). There is a qualified nurse on call. Discard broken or cracked glassware. See safe work practice sheet no.s 1,2,3,6. |
| Science Laboratories  Computer Laboratories,  Nursing areas,  Research areas. | Slips, trips and falls, resulting in injury. These account for the majority of physical hazards in this Institute. Slipping hazards are caused by unsuitable flooring surfaces in areas likely to become wet, e.g. vinyl floors near outside entrance doors and liquid spillages on linoleum or tiled surfaces in social area. Washrooms and toilets with similar floor surfaces may be slip hazards when wet. | M | Keep all walkways clear. Wipe up floor spillages immediately. Electric cables on portable appliances must not be left as a tripping hazard. Employees are expected to note the hazard, report spillages and take care when traversing the floors. Institute cleaners have been instructed in Safe Work Practice Sheets to use "slippery floor" signs and strategically placed warning cones. These will alert staff when floors are wet. The cleaners have also been instructed not to use solvent waxes but instead to use non-slip emulsion wax. All science laboratory flooring is non-slip. Designated areas are set aside for coats and bags. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 9

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

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| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories,  Nursing areas,  Research areas. | **Working at Height**  Staff storing equipment or materials at height are at risk of falling and causing a serious injury. | **H** | Avoid work at height where this is reasonably practicable to do so.  Equipment and materials should not be stored at height.  If work at height cannot be avoided it should be properly planned and organized.  The place where work at height is done should be safe and be free from obstructions.  Equipment for work at height is visually inspected before each use by the user to ensure it is safe to use.  Injury from falling objects is to be prevented.  If safety stepladders are to be used to gain access then following should be adhered to:   * Follow manufacturers’ instructions for setting up. * Work must be of short duration i.e. less than 30 minutes. * The work is low risk e.g. light work i.e. not strenuous or heavy work. * Do not carry heavy or awkward tools or equipment. * Maintain three points of contact (hands and feet) at the working position. * Do not overload the stepladder. * Do not overreach or the stepladder may overturn. * Avoid side loading the stepladder keep the rungs facing the work activity. * Do not place filled containers on shelves at height especially containing chemicals. * Place stepladder on firm and level ground, not in front of or near a doorway. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 10

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

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| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories,  Nursing areas,  Research areas. | **Lone Working.**    Hazards that out of hours or lone workers may encounter include, but are not limited to:   * accidents or emergencies arising out of the work, including inadequate provision of first aid * sudden illnesses * physical violence from other persons * hazards from the work activity taking place | **H** | * The School has adopted the Institute’s guidance document on *Lone Working Guidance*, it can be found at Appendix 8 to this Statement. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 11

**SECTION: School of Science**

**Last updated: 2020**

**RESPONSIBLE PERSON:** Dr. Gertrude Taggart

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| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Science Laboratories, | **Radioactive materials.**  External irradiation of the body,  including possibly more sensitive  organs such as the eyes. Internal irradiation of the body arising from materials which have entered by inhalation, by absorption through the skin, by ingestion or through wounds | **L** | The Institute is licenced by the Radiological Protection Institute of Ireland for Custody and Use of a range of radioactive materials. The control measures in place are detailed in 2 documents :  1. Radiation Safety Procedures, Appendix 9  2. Risk Assessment of Radioactive materials, Appendix 10  both can be found at Appendix 9 and 10 of this Statement.  The Department possesses only 1 radioactive source, part of the detector on a Gas Liquid Chromatograph in 3703. |
| Veterinary Nursing students on placement | **Exposure to X-rays during animal examinations** |  | The safety procedures of the practice where the student is on placement is effective. Students are provided with dosimeters by the Department and records are maintained for 7 years. Students are issued with guidance on the use of dosimeters and sign an agreement to use the dosimeters in the appropriate manner |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 12

**SECTION : NURSING & HEALTH STUDIES**

**UPDATED : SEPTEMBER 2020**

**RESPONSIBLE PERSON : Dr. GERTIE TAGGART**

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| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Clinical Nursing area | The drug trolley and a controlled drug (MDA) press to simulate the administration of drugs | **L** | Drugs are not stored in the labs at any time. Placebos are used in all simulations. |
|  | **Invasive Procedures** | **L** | Mannequins are used to demonstrate and practice invasive procedures. No invasive procedures are carried out on humans and students should not practice any invasive procedures on each other in the skills labs. |
|  | **Latex Allergy** | **L** | It is not necessary to wear gloves for infection control purposes. However, staff/students need to demonstrate/learn the correct techniques to put on and remove sterile gloves for practice in the clinical areas.  Gloves are not worn unless for demonstration purposes.  Remove and wash hands.  Powdered gloves must not be used when powder free gloves are available.  Non- latex gloves for people with latex allergies. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 13

**SECTION : NURSING & HEALTH STUDIES**

**UPDATED : SEPTEMBER 2020**

**RESPONSIBLE PERSON : Dr. GERTIE TAGGART**

|  |  |  |  |
| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Clinical Nursing area | **Manual Handling** | **L** | The College operates a minimal lifting policy. Alternatives to lifting must be used. Heavy equipment stored at waist level. All students must complete the manual handling training programme. All staff must do a manual handing course every three years.  The hoist is only used for demonstration purposes by qualified manual handling instructors. |
|  | **Mats for Training purposes** | **L** | These mats are only to be moved by using the proper manual handling techniques. Moved by the caretakers a required.  They are stored on a trolley. |
|  | **Trailing leads and flexes.** | **L** | All leads and flexes must be stored in a safe manner so as to avoid trips and falls |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 14

**SECTION : NURSING & HEALTH STUDIES**

**UPDATED : SEPTEMBER 2020**

**RESPONSIBLE PERSON : Dr. GERTIE TAGGART**

|  |  |  |  |
| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Clinical Nursing area | Safe Disposal of Sharps and Sharps Injury Policy | **L** | To reduce the risk of sharps injury it is essential that the handling and disposal of sharps be managed appropriately.  Needles should not be re –sheathed, bent, broken, removed from disposable syringes or manipulated by hand.  If a needle sheath must be replaced, place the sheath on a stable surface and slide the needle into it.  Dispose of all sharps immediately after use.  Sharps containers specifically designated for the disposal of sharps are provided in the skills labs.  Sharps containers should be assembled properly with the lid firmly locked into the container.  Syringes and needle should be discarded immediately after use into the sharps containers. No sharps should be put into regular waste.  Non-sharps should not be placed in the sharps containers.  No attempt should be made to retrieve items from the sharps containers or to press down on sharps to create space in the container. P.T.O.  Sharps containers should be sealed when ¾ full to prevent overfilling.  The sealed sharps containers must be stored in safe storage for collection by the hospital for incineration. |

**GENERAL RISK ASSESSMENT RECORD & CONTROL MEASURES**

Form No. 15

**SECTION : NURSING & HEALTH STUDIES**

**UPDATED : SEPTEMBER 2020**

**RESPONSIBLE PERSON : Dr. GERTIE TAGGART**

|  |  |  |  |
| --- | --- | --- | --- |
| AREA | HAZARD | RISK | CONTROL |
| Clinical Nursing area | Specialised Equipment. Simulation Mannequins, Defibrillators, Syringe pumps, CPR mannequins, infusion pumps, Venesection arms, Feeding pumps. | **L** | Training is provided for all staff in the use and care of all equipment. Specialised equipment should only be used for its proper purpose under the supervision of trained people. Equipment should be inspected and maintained in line with the manufacturers’ instructions t to ensure its continued safety. Any damage or faults should be reported to the Head of Department and dealt with promptly. |
|  | Treadmill and Bicycle | **L** | Treadmill and Bicycle not used at present and it is not to be used by untrained personnel. |

# Appendix 2: Specific Hazard Identification & Control Forms for Practical and Research Activities

There follows a list of the courses for which specific risk assessments have been completed. The risk assessment process is yet to be completed for a number of current courses and any new practical class/research activity that may be developed, prior to the practical class/research activity taking place. The existing specific risk assessments are comprehensive and cover the entire aspect of the practical/research including preparation work carried out by technical officers and refers to the relevant MSDS where chemicals are used. This process will include risk assessments for project work and research work.

Current specific risk assessments are published in a number of ways:

* As the appendix to course manuals where they exist
* By individual staff at the beginning of the relevant practical session
* As PDF documents on the Department Intranet site.

Specific risk assessments have been prepared for the following:

1. Chemistry practicals year 1
2. Activities in the Food Technology Laboratory
3. Food Technology practicals year 2
4. Food Technology practicals year 3
5. Materials Science practicals year 2
6. Instrumentation –Spectroscopy year 2
7. Instrumentation –Chromatography year 2
8. Spectroscopic Methods year 3
9. Technical Staff general activities
10. Storage and use of Radioactive materials

# Appendix 3: Safe Work Practice Sheets and Information Necessary for a Safe work environment

* 1. **Large items of analytical equipment.**

The Department of Science operates 2 Instrumentation laboratories and a number of Research Laboratories where sophisticated analytical instruments are used. Students receive detailed instruction in the operation of this equipment in both second and third year. Fourth year and Post-Graduate students regularly used the equipment unsupervised in the course of research project work. The Department has prepared a set of Standard Operating Procedures for these instruments as listed on the following page. The Technical Officers in the area are available for clarification of the SOP or more detailed assistance. It may also be necessary to consult the Instrument manual in certain cases.

**INSTRUMENT START -UP AND SHUT *-*DOWNPROCEDURES**

**A Shimadzu High Performance Liquid Chromatograph**

**B Metrohm Ion Chromatograph**

**C Shimadzu GC-15A Gas Chromatograph**

**D Perkin Elmer 400 Atomic Absorption Spectrometer**

**E Perkin Elmer Fourier Transform Infrared model BX**

**F Metrohm Polarograph**

**G Mitsibushi KF21 Karl Fischer**

**H RSI R-3000 Raman Spectrophotometer**

**J. Perkin Elmer Clarus 400 ECD-GLC**

**K. Perkin Elmer Clarus 480 FID-GLC**

**L. Perkin Elmer Clarus 680 GC/MS**

**M**. **Shimadzu LC10 HPLC system**

**N. Shimadzu UV/VIS**

**O. Total Chrom Software for Gas Chromatography**

**B. Small items of equipment and general techniques**

Due to the wide range of techniques and equipment used within the courses in the Department of Science it is not considered feasible to produce individual Safe Work Practice Sheets relevant to all the Science Laboratories and Research areas within the Department. **CLEAPSS** is an advisory service, based in the United Kingdom, providing support in science and technology for a consortium of local education authorities and their schools. Independent schools, post-16 colleges, teacher training establishments, curriculum developers and others can apply for associate membership. The Science Department of Letterkennt Institute of Technology has been an associate member since 2008. Consequently, the School has decided to use the CLEAPSS Laboratory handbook as the source for guidelines on general laboratory equipment and techniques.

While individual staff may have personal preferences on individual topics or techniques, the Handbook is the best single source available for the range of topics required. Referring to the Handbook in the Safety Statement does not in

any preclude any member of staff teaching a safe variation on any theme covered. The relevant sections of the Handbook have been printed, bound and placed in each laboratory. The following pages are an index to the hard copy:

**D. Research laboratories.**

The Department currently operates applied research. Research students and staff provide and devise individual risk assessments and safe methods of work appropriate to the activities they are engaged in. The Institute is satisfied that they are competent to conduct such assessments and maintain the necessary records.

**E. Working with large Animals.**

A significant part of the Veterinary Nursing course takes place at Lurgybrack Open Farm where animal handling skills are taught. LYIT staff and the management of the farm have prepared safety procedures for Lurgybrack Farm (Appendix 12).

**F. Room 2291**

This computing laboratory is utilised for undergraduate teaching. A description of the various hazards and risks and control measures in place for this room can be accessed at Appendix 13.

# Appendix 4: General Laboratory Rules

These rules are posted in each laboratory and are to be read by all staff and students entering the laboratory. The lecturer conducting the first practical of each year is to go through these safety rules to ensure students fully understand all the contents and follow them at all times.

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| **General Rules;**   1. Bags and coats must be stored in lockers provided outside the laboratories. 2. Experimental work should not be carried out unless an instructor is present. 3. The position of exits, fire alarms, fire extinguishers, fire blankets, eyewash stations and safety showers should be noted. 4. All laboratory users must be familiar with fire evacuation procedure. 5. Eye protection must be worn at all times in the laboratory. 6. A laboratory coat, fully fastened, must be worn at all times in the laboratory. 7. Open sandals should not be worn. 8. Long hair must be tied back securely. 9. Eating, drinking is strictly prohibited. 10. Mouth pipetting is NOT allowed, under any circumstances. 11. All accidents/incidents (however minor) must be reported immediately to the instructor. 12. It is essential to act maturely and responsibly in the laboratory and never act in a way that might be dangerous to yourself or others. 13. The floors and benches must be clean and tidy at all times and kept free of any clutter. 14. Any spillages should be reported immediately to the instructor 15. Wash hands before leaving the laboratory |
| **Rules when working with chemicals;**   1. Chemicals should be dispensed into properly labelled containers. Safety information is available from the CLEAPSS cards in the laboratory 2. Protective gloves should be worn when handling hazardous or toxic chemicals. 3. Skin contact with chemicals must be avoided. In case of accidental contact the chemical must be washed off immediately with plenty of running water. 4. In the event of getting a chemical in the eye the area should be flushed with large quantities of clean water for 15 to 20 minutes. 5. Pipettes containing corrosive chemicals should not be placed carelessly on benches. Glassware containing corrosive chemicals should be rinsed after use. |

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| **Rules when working with biological samples;**   1. Wear disposable gloves and use aseptic technique when using microbiological cultures. 2. Cover open wounds with water-proof dressings. 3. Place contaminated pipettes, tips and slides in disinfectant. 4. Autoclave all microbiological waste. Bottles containing media or waste for sterilization should have their caps loosened before autoclaving 5. Cover spills of liquid cultures with paper towels, spray with disinfectant and leave for 20 minutes before mopping up with fresh towel. Avoid aerosol formation. 6. Gloves should be worn when handling specimens of animal origin. 7. Disinfect the workbench and any equipment used at the end of the practical. 8. Biological waste should be autoclaved and disposed of according to the procedure at the end of this section.   **Fire Safety**   * Portable fire extinguishers located in each laboratory note location. * Fire alarm activated by smoke detectors and break glass units (B.G.U in hallway). * Emergency exits clearly identified and clear of obstructions. * Evacuation plan in place and occupants of laboratory made aware of it. * Bunsen burners are not to be left on unattended and when not being used to heat a source, yellow flame should be visible. * Tubing of Bunsen burners inspected visually for damage before each use. * A naked flame, ignition source or any form of heating plate should only be turned on after a check is made that there are NO explosive chemicals in any part of the laboratory. * Propane gas proving system should be switched off at end of each practical by lecturer or technical officer. |
| **Rules when using laboratory equipment.**   1. Students must not use analytical instruments until they have been given permission by the instructor, and had detailed instruction on their operation. Students must be supervised when using laboratory equipment. 2. Students using apparatus under vacuum or pressure must have the set-up checked by the instructor before proceeding. |
| **Rules when using Bunsen burners.**   1. Tubing should be checked for damage before use. 2. When lit, a Bunsen burner should show a visible yellow flame when not in use.   A naked flame (e.g. bunsen burner) or any form of heating plate or ignition source should only be turned on after a check is made that there are no flammable or explosive chemicals in *any part* of the laboratory  **First Aid**   * Laboratory staff includes trained occupational first aiders. * First aid kits provided with list of first aiders their contact numbers. * Please note location of safety shower and eye wash station in the laboratory. Tested and flushed monthly. |
| **Protective equipment**   * Labcoats (fully fastened) and goggles EN 166 are compulsory at all times in the laboratory. * Gloves provided: * Nitrile or Latex gloves for general handling of chemicals. * Heat resistant gloves and tongs provided for handling hot items. |
| **Extraction Safety**   * Fume cupboards provided for handling hazardous or volatile chemicals in the laboratories where the majority of the chemical handling occurs. * Face velocity tested annually. * Cupboards serviced and repaired as required. * Analysts must remove all portable equipment, samples and reagents from fume cupboards when they have finished with it. * Microwave digester connected to extraction. * Atomic absorption located under extraction canopy. |
| **Glassware Safety**   * Use PLASTIC instead of glass wherever possible. * Never use excess force on glass. The correct safe technique as demonstrated by lecturer/technical officer is to be used when attaching pipettes to pipette fillers. * Damaged or chipped glassware or crucibles disposed of immediately (check integrity before each use). * Containers for broken glass provided. Use appropriate gloves when cleaning up broken glass and inform lecturer/technical officer of any breakages. * Dishwasher provided for cleaning glassware. * Clean glassware stored safely on shelving or in cupboards. * Trolleys & trays provided for moving glassware. |

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| **Laboratory Rules Specific to the Veterinary Nursing Laboratory** |
| * Dispose of waste solids, tissue, dressings etc., in the bins. * Safety glasses or over glasses for ordinary spectacles must be worn when working with chemicals and dental machine. * Loose hair should be tied back. * Assume all chemicals/medications are dangerous. * Do not handle disinfectants unless wearing protective clothing such as gloves and aprons. * Dispose of waste liquids and blood as instructed – either into the waste-bottle, clinical waste bags provided or down the sink with lots of water if permission to do so has been given. Never return the surplus to the bottle. * All sharps should be disposed of in the sharps bins provided. |

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| **Procedure for disposal of Microbiology practical waste.** |
| In order to clarify the statements in the Department’s *“ Risk Assessment for Laboratory Technician Activities*”and “*Draft Hazardous Waste policy”*  the following procedure should be followed when disposing of all waste petri dishes and other disposable plastic ware generated in all practical classes.  All used or surplus material should be collected at the end of each class and prepared for autoclaving that evening.  Autoclave (polypropylene) bags are tear resistant but can be punctured or burst in the autoclave and should be placed in a rigid container (Plastic containers provided) during autoclaving. Some are printed with an indicator that changes colour when processed. It is preferably to use plain bags without ‘biohazard’ printed on the outside. A ‘biohazard’ label could be placed on the bag holder and any containers used to transport or hold the material prior to sterilisation.  Note Polypropylene bags are impermeable to steam, and for this reason should not be twisted and taped shut, but gathered loosely at the top and secured with autoclave tape or stapled x3 along the top of the bag. This will create an opening through which steam can pass.  All such waste material should be autoclaved overnight, start the autoclave cycle last thing in the evening so that it will have time to run a full cycle and be cold next morning. The autoclaves are located under an extractor hood which should be switched on before the autoclaves are opened.  Remove sterilized waste from the autoclave on arrival in the morning place it in a large waste bag and take it/arrange for it to be taken to the refuse skip. |

**R3709a Safety Notice**

Access to this room is by swipe card only. Technical staff and academics who work in this area have rights activated on their Institute ID badges.

Access for students involved in project work is on a sign-in sign-out basis, a keycard will be issued for the duration of the work, please contact the Technical staff for details.

Please Note:

**Do Not Enter** this area if the Blue light above the door is flashing – this indicates a low oxygen level in the room. Inform the Technical staff immediately.

If the alarm bell within the room sounds please vacate the room immediately, then follow the normal evacuation procedures.

# Appendix 5: Fire & Emergency Safety Management Policy (Draft)

**1.0 Introduction**

The Letterkenny Institute of Technology has developed this Fire and Emergency management policy to safeguard and protect the building users and campus from fire or other campus wide emergencies that require building evacuation.

**2.0 Fire Safety Management Programme**

A fire safety management programme has been undertaken by the Institute to guard against the outbreak of fire and to ensure as far as is reasonably practicable the safety of persons on the premises in the event of outbreak of fire.

The Safety Officer, with the assistance of the Estates Manager, is responsible for the implementation and oversight of the fire safety programme.

Specific duties are also assigned to designated personnel named in the evacuation procedure.

It will be a function of the Estates Manager – Mary Daly (Letterkenny Campus) and Facilities.

The programme incorporates arrangements for:

1. Fire prevention
2. Instruction and training of staff
3. Maintenance of escape routes
4. Fire protection systems and equipment
5. Fire and evacuation drills
6. Emergency lighting system
7. Maintenance of a Fire Safety Register
8. Informing building users of the procedures to be used in the event of a fire or other emergency
9. Assistance to the Fire Brigade

**3.0 Fire Prevention**

The following are the major elements of the action to be taken by staff as appropriate to minimise the risk of the outbreak of fire:

1. Not allowing rubbish and waste materials to accumulate. Waste and rubbish will be placed in waste bins and larger items of refuse, e.g. packaging, will be clearly designated as refuse so that it may be removed daily by cleaning and maintenance staff.
2. Limiting flammable liquids and gasses to small quantities, handling them with care and storing them in suitably labelled containers in designated suitable storage areas.
3. Confine smoking to designated areas. Smoking is prohibited in all areas of the Institute with the exception of designated smoking areas. Please see campus map of designated smoking areas in smoking control section 21.0.
4. Checking electrical and gas appliances regularly for defects. Any defects should be brought to the attention of the Estates Manager so that repairs may be arranged and the equipment should not be used until the defect is remedied.
5. Periodic inspection and testing of laboratory and LPG gas systems by specialist contractors to ensure that systems are safe and meet with the appropriate specifications. All suspected gas leaks must be brought to the attention of the Estates Manager immediately after they are detected.
6. Inspection of upholstery regularly by maintenance staff. Any item which has its infill material exposed should be repaired or removed immediately.
7. Regular cleaning and clearance of oil and grease from mechanical extract equipment, machinery and cookers and regular servicing by competent persons.
8. Careful control of all sources of ignition to minimise fire risk.
9. Never propping or wedging open fire doors and smoke control doors.
10. A prohibition of the use of portable gas and liquid fuel heaters. The use of portable radiant heaters is not allowed in any area to which students and members of the public have access.
11. The use of electric kettles, electric toasters and other heat generating culinary appliances in areas other than designated kitchens is prohibited.
12. Persons involved in building or maintenance operations involving the use of flame or the use of heat producing equipment as sources of ignition, e.g.
    * Brazing/soldering/welding equipment
    * Blowlamps/oxy-acetylene torches
    * liquefied gas appliances
    * Bitumen boilers
    * Cutting and burning equipment or any other hot-work equipment generating heat sparks or flame requires a “Hot Work Permit” issued by the Estates Manager, or Clerk of Works as appropriate.

The permit will be issued in consultation with staff only after a detailed examination of the work area has been carried out to establish that the contractors have taken all the steps necessary to prevent the occurrence of a fire and that they have available at hand the necessary fire fighting equipment to deal with the outbreak of fire. This activity is restricted where possible to times when students are not present in the Institute.

1. Making all building and service contractors engaged to work on the premises aware of the Institute’s fire safety requirements. To this effect the Estates Manager will be informed of any new contractors coming on site. (n)
2. Clear marking of areas of the building to which students and the public are not allowed access. Maintenance staff take care not to allow unauthorised admittance to rooms in the Institute.
3. Use appointed storage areas only. The use of plant rooms and services ducts for the storage of materials is prohibited
4. Confining the storage of cleaning materials to metal storage cabinets in appointed storage areas.
5. Inspection by maintenance staff of all vacant areas of the Institute and removal of any potential fire hazard prior to locking rooms at the end of each day.

(q) No services to be installed if passing through walls or floors without the approval of the Estates Manager. This is in the interests of maintaining the integrity of fire compartmentalisation. The Estates Manager will make arrangements for fire-stopping around services on completion and will arrange for periodic inspection and recertification of fire

compartmentalisation

**4.0 Instruction and Training of Staff**

All staff to which specific duties have been assigned will be given appropriate instruction and training. Particulars of such training will be recorded by the Safety Officer.

Staff will receive training and /or instruction in relation to:

1. fire prevention measures set out above
2. the emergency procedures and fire and evacuation drills devised for the premises
3. the evacuation of occupants, paying particular attention to the young, disabled and infirm
4. arrangements for ensuring that escape routes and exit doors are unobstructed and available for use
5. arrangements for the provision of assistance to the fire brigade
6. fire control techniques including the use of fire extinguishers and fire blankets; closing doors and windows to inhibit fire spread; shutting off of electricity, fuel supplies and ventilation systems where applicable; the layout of the building including escape routes; the location of fire alarm call points, fire fighting equipment and assembly points.

**5.0 Maintenance of Escape Routes**

All emergency escape routes must be kept free from obstruction and all doors on these routes must be kept clear and immediately available for use. All doors and gates must be easily opened by persons leaving the premises. Escape routes including escape stairways are checked regularly by maintenance staff and noted in the Fire Safety Register.

Fire resisting doors, smoke stop doors, exit doors, self-closing devices and panic bolts are checked regularly by Maintenance staff and are maintained in a usable and fault free condition.

Doors which are designated “Emergency Exit Only” must only be used as such. They must not be used as regular entry/exit doors in the interest of protecting the panic ironmongery and ensuring it will be functional when required. Materials and equipment must not be stored in escape stairwells.

External areas at or near escape routes as well as internal escape routes must be kept unobstructed and immediately available for use. Vehicles must not be parked on escape routes. Disabled Refuge Points are provided in fire protected stairwells. Disabled persons are to be assisted to these areas to await safe evacuation by the Fire Brigade. Disabled refuge areas are numbered for identification purposes and have a contact number to be rang to contact security and estates. Plans are underway to provide direct two-way communication between disabled refuge points and the main reception area for use by the fire brigade. Such a system has been installed recently in the CoLab building.

**6.0 Fire Protection Systems and Equipment**

(a) A fire detection and alarm system has been installed in each campus within the Institute. The systems are regularly maintained in accordance with the requirements of IS 3218 2009

The signal emitted by the alarm system sounder varies:

1. An intermittent audible warning signal indicates a fault or that the system is under test. Intermittent audible warning signals operate only in Letterkenny Campus. In this case all persons may remain in the building but should prepare to evacuate. When the intermittent audible signal activates, caretaker’s security staff, and estates office investigate the cause of the alarm. If it is a false alarm, then they will silence the bells and reset the system. If it is a real fire then they will trigger the continuous bell.
2. A continuous audible signal indicates a fire or other emergency requiring evacuation of the building. In the Killybegs Campus it could also indicate a fault or test situation as outlined above, however all continuous audible alarms must be treated as a signal to evacuate. In all cases all persons must leave the building and make their way to the nearest assembly point following the evacuation procedure appropriate to their location. All persons should reach an Assembly point within 5 minutes of the alarm sounding continuously.

The system is linked to corridor dividing fire doors. In the event of alarm activation the doors will close automatically thereby preventing the spread of fire to adjoining compartments.

For security reasons as well as energy conservation considerations, many exit doors are permanently electro-magnetically locked, but are linked to the fire alarm system. When the alarm is activated the doors will open automatically. In the cases where the electro-magnetic lock does not release these can be manually overridden by breaking the green break glass unit beside the door and pushing the push bar on the door to open the door. These doors can also be opened in this manner in cases of medical emergencies to gain access or egress. All such doors have appropriate signage in place.

**7.0 Emergency Lighting System**

Emergency Lighting Systems operate in all Institute buildings. It is regularly maintained in accordance with the requirements of IS 3217:2008.

**8.0 Fire Fighting Equipment and Systems**

Fire mains and Hydrants are inspected and maintained in accordance with BS 5306. The date of the most recent inspection is noted on each appliance. Test reports on ring mains and Hydrants are held in the Estates Office and noted in the Fire Safety Register on each campus. Fire Hydrant locations are noted on the floor plans posted at prominent locations throughout the building. Fire Hydrant covers are painted yellow and are indicated by posts with an “H” symbol in black on a yellow background.

Portable fire extinguishers complying with I.S. 290:1986 are inspected and maintained in accordance with I.S. 291:1986. The date of testing is noted on each extinguisher and records of inspections kept by Estates Manager.

Fire points holding a range of suitable extinguishers are provided in common areas. Laboratories, workshops, kitchens etc. each have extinguishers particular to the type of operations being carried out in that area. All extinguishers have instructions on their suitability or otherwise to various types of fires.

It is an offence to tamper with fire fighting equipment. It is the responsibility of maintenance staff and of lecturing and technical staff in control of laboratories to report any discharged damaged or missing extinguishers to the Estates Manager immediately after they are discovered.

**9.0 Fire Safety Register**

A Fire Safety Register is maintained on each campus under the supervision of the Estates Manager Mary Daly (Letterkenny Campus) and Facilities. The register records all fire safety matters. The register is available at any time for inspection by any authorised officer of the Fire Authority. The register contains the following data:

1. The date of each fire and evacuation drill, the building and staff taking part are recorded.
2. The type, number and location of fire protection equipment on the premises including water supplies and hydrants etc.
3. The date of each inspection and test carried out on fire protection equipment and systems, along with brief comments on the results of the checks and actions taken (and by whom) to remedy defects.

**10.0 Fuel Storage**

Oil tanks are located at a safe distance from buildings and are protected from unauthorised access.

LPG gas is extremely flammable. Its handling and storage must be in accordance with I.S. 3216. It is enclosed by secure fencing and is labelled with appropriate warning and safety signs.

Laboratory gas is also hazardous and is stored in secure locations externally. Staff members working with gas must have completed BOC gas safety training. This gas supply is labelled with appropriate warning and safety signs.

Please note smoking is strictly prohibited close to any fuel storage areas (Gas or oil) please see section on smoking on campus.

**11.0 Fire and Emergency Evacuation Procedures**

1. These fire and emergency evacuation procedures have been prepared for use in the event of a fire or other emergency evacuation.
2. Regular fire and evacuation drills are planned and organised by the Health & Safety Officer in Letterkenny Campus. The procedures used during drills will simulate real emergency procedures. All staff and students must participate in the drills and apply the procedures efficiently and promptly. Each drill is reviewed immediately after the drill by the Chief Fire Marshal and the Checkers. A report on the drill is circulated to all staff and the Safety Monitoring Committee agrees modifications arising from the drill where necessary.
3. Floor Plans are located at prominent locations throughout the Institute, the plans indicate:
   1. Emergency escape routes,
   2. Fire points i.e. fire fighting equipment locations,
   3. Fire alarm panel location,
   4. Fire Assembly points,
   5. Gas and power cut off devices,
   6. Fuel tanks, boiler houses and all areas of high risk e.g. Kitchens and Chemical Stores,
   7. Fire Hydrant locations.

Each plan indicates its own location by the words “*You are here*”. Bound sets of these plans are kept at Security and Caretakers Offices for use by the Fire Brigade.

1. Illuminated emergency exit signs or directional exit signs are positioned in all areas of the Institute indicating the nearest escape route. It is important to note the alternative escape routes from various areas.

**12.0 Assembly points**

Fire Assembly Points are at various locations A to E identified below and displayed on Floor Plans at the main entrance. The Assembly Points are identified by a green and white sign stating “Fire Assembly Point”.

**Fire Assembly points Letterkenny Campus**



**13.0 Responsibilities of Employees**

**13.1 All staff**

All staff must familiarise themselves with these fire and emergency evacuation procedures and must be aware of all fire escape routes in the areas where they work. They must proceed via the nearest available exit to the nearest Fire Assembly Point.

**13.2 Chief Fire Marshal**

The Health & Safety Officer will act as Chief Fire Marshal at Letterkenny Campus. The Estates Manager will deputise for the Health & Safety Officer in his absence at Letterkenny campus. The Chief Fire Marshal will arrange and manage fire drills and real evacuations, liaise with Senior Fire Marshals and the Fire Brigade signal the end of the drill or evacuation and review and report on the drill or evacuation.

**13.3 Senior Fire Marshals**

Heads of Schools, Heads of Departments and Heads of Function will act as Senior Fire Marshals/Deputies at the Fire Assembly Points. They will ensure that all class or staff groups present at the assembly point will remain there in an orderly fashion until instructed otherwise. Senior Fire Marshals areas of responsibility are listed in the assembly point table under section 12.o above.

**13.4 Fire Marshals**

To assist in a speedy evacuation, Lecturers will act as Fire Marshals for the class group of which they are in charge. At the beginning of each academic year they should do a trial evacuation with each class group from where they lecture.

**13.5 Checkers**

A team of checkers has volunteered to check all specific nominated areas to ensure evacuation is complete and to report on the evacuation duration for their area and any operational difficulties highlighted by the drill. They will ensure nobody renters the building until it is safe to do so. The checkers, together with the caretakers and grounds man will ensure nobody leaves the grounds until all persons have been accounted for. The role of Checker is vital to ensuring the evacuation of Public Buildings such as ours. The roles and responsibilities of the checkers are outlined in section 18.0.

**14.0 Action to be taken by Employees**

14.1 On hearing the fire alarm sound **continuously**, Fire Marshals will take the following action:

1. Evacuate occupants using the nearest available escape route
2. Make a head count of people as they leave the room
3. Close the room door when empty
4. Not allow anybody to re-enter the premises for any reason
5. Not use the lift
6. Assemble at the nearest assembly point
7. Advise the Senior Fire Marshall at the assembly point of any persons in their charge remaining in the building.
8. Advise the Senior Fire Marshall of the location of the fire if discovered in their area.
9. Assist the Fire Brigade on arrival.

14.2 On discovering a fire, all employees should:

1. Operate the alarm system using the break glass in the nearest Fire alarm call point
2. Alert management and other staff
3. If necessary, call the fire brigade (see ‘Calling the Fire Brigade below)
4. Inform students and the public and direct them to the nearest escape route
5. Do not use the lift
6. Attack the fire using the nearest suitable equipment (only if safe to do so)
7. Leave whenever danger threatens
8. Close all doors as areas are vacated, checking nobody is left behind
9. Assemble at the nearest Assembly point. Do not attempt to leave the grounds or to re-enter the building until it has been clearly signalled that it is safe to do so.
10. Assist the Fire Brigade on arrival
11. Assist Fire Marshals/Senior Fire Marshals/Chief Fire Marshal.

14.3 On hearing the Fire Alarm sound continuously, Senior Fire Marshals should, (a) Proceed to the designated assembly point.

1. Organise and retain Fire Marshals and class/staff groups in an orderly fashion at the assembly point.
2. Seek information from Fire Marshals and advise the Chief Fire Marshal of any missing groups/persons/disabled persons left in the building. (d) Assist with any requests from the Fire Brigade.

**15.0 Responsibilities of Students / Members of the Public**

It is the responsibility of all students and members of the Public to leave the premises immediately on hearing the fire alarm sound continuously**,** go via the nearest available exit route to the nearest Assembly Point, assemble in an orderly fashion under the direction of the Senior Fire Marshal and remain there with their group until hearing the siren denoting the all clear/end of drill. They may then re-enter the building. They must at all times obey the instructions of the Fire Marshals, Checkers and Senior Fire Marshals.

**16.0 Fire Instruction Notices**

Fire Instruction Notices will be posted in prominent areas throughout the Institute advising all building occupants of the emergency escape procedures. (Please see below)

**17.0 Checker Roles/Responsibilities during an emergency evacuation or drill:**

1. On hearing the intermittent alarm (Letterkenny Campus only), prepare for evacuation i.e. locate checker tunic and stop clock.
2. On hearing the continuous alarm, start stop clock and proceed to most remote part of the allocated area i.e. the furthest point from an escape door or escape stairs.
3. Check the area for remaining persons and ask them to leave immediately by the nearest available exit route. All rooms including toilet areas to be checked.
4. If persons refuse to leave, please note that checkers have full authority to insist on it. The names of non-co-operative persons are to be reported to the Chief Fire Marshal.
5. If there are disabled persons in wheelchairs in your area, take them to a refuge to await evacuation by the Fire Brigade. Refuges are located at all first and second floor storey exits, i.e. stairs landings or fire protected lobbies adjacent to escape stairs landings, and also at Ground Floor exits with steps outside where not serviced by external wheelchair ramps. Checkers should familiarise themselves with the locations of refuges in their area. They are identified by signs displaying the wheelchair logo with the word ‘refuge’. Take care to locate the wheelchair so that it does not create an obstruction on the escape route. Ask a couple of class members/friends to wait with the disabled person until the fire brigade arrive.
6. If there are persons with disabilities other than requiring the use of a wheelchair in the area, enlist the assistance of classmates to escort them to the Fire Point.
7. Lifts must not be used in the event of a fire. Lifts return to ground floor and open automatically (Letterkenny campus only). Checkers to check that there are no people in lifts in your area.
8. When the area has been fully checked, leave the building and remain at your designated exit point to ensure nobody re-enters the building until the drill is complete. Stop the stop clock and note the evacuation time.
9. If a checkers exit point is at an access point to the car park or road you must prevent persons from leaving the grounds.
10. The Chief Fire Marshal will check with you to ensure your area has been evacuated. You must inform them of the location of any disabled persons in refuges. The Chief Fire Marshal will inform the Fire Brigade.
11. Prevent persons leaving grounds until drill is over in conjunction with caretakers and grounds man.
12. On hearing the siren denoting the end of the drill, allow persons to re-enter the building.
13. Attend a short meeting to review performance with the Chief Fire Marshal afterwards.

**18.0 Checker Area/Exit point allocation**

Each checker has been issued with a drawing and information table indicating the area for which they are responsible and the Exit point they will guard on completion of the evacuation. Please note that where a checker is deputising for another checker, then the Exit point which applies is the point associated with their own area. After the area has been evacuated by a deputy checker they should command the assistance of a member of the academic staff not at that time in charge of a class or a student if no staff are available to man the exit point to ensure nobody re-enters the building.

**19.0 Calling the Fire Brigade**

During the hours when the switchboard is in operation, currently 9am to 1pm and 2pm to 5pm, the switchboard operator will be responsible for calling the Fire Brigade. The switchboard operator may be contacted by dialling “0”.

**20.0 Smoking Control**

Smoking is prohibited in all areas of the Institute in compliance with the Public Health (Tobacco) Act 2002. However, there are a number of outdoor designated smoking areas where smoking is permitted.

# Appendix 6: Chemicals storage and use policy (Draft)

**Introduction**

The School of Science has adopted the classification codes used by the Health and Safety Executive (U.K.) in its book *Chemical Warehousing : the Storage of packaged substances* IB **071761840 .** to describe the various chemical hazards under its control

The classes used are:

1. Explosive substances
2. Compressed gases
   1. Flammable
   2. Non-flammable and Non toxic
   3. Toxic
3. Flammable Liquids
4. Flammable Solids
   1. Readily combustible
   2. Spontaneously combustible
   3. Dangerous when wet
5. Oxidising Substances
   1. Oxidising Substances
   2. Organic Peroxides
6. Toxic Substances
7. Corrosive substances

Using the above classifications the entire chemical stock of the School has been examined and all stock has been assigned to the appropriate category. Materials were assessed based on their hazard (the inherent properties of the chemical) and the risk (the probability of the hazardous properties of the chemical causing harm to people and the environment) involved in storage and use. For the storage of dangerous substances there are four main events which individually or jointly have the potential to cause significant harm or damage:

1. Fire
2. Explosion
3. Release of a toxic substance
4. Release of a corrosive substance.

The risk of these events and the controls which have been put in place are:

|  |  |  |
| --- | --- | --- |
| Event | Possible cause | Controls in place |
| Fire | Ignition following a spill Self combustion  Arson  Hazardous activities e.g. Welding, Smoking  External events e.g. fire in adjacent buildings | All electrics are spark proofed no source of ignition permitted in store.  All pyrophoric materials stored in flame proof cabinet  Access controlled/ limited to technical staff  Permit to work system in operation controlled by Estates manager. No Smoking Building.  Stores are fire compartmented , Fire detection system in all areas of campus.  Fire suppression system in store which automatically trips on rise in temperature. |
| Explosion | `Detonation due to shock  Deterioration due to drying out | Training and information for users in proper handling. Proper storage system.  Regular inspection and maintenance. |
| Release of toxic substance | Spillage  Breach of container | No container to be opened in stores, only to be opened/used in fume cupboards in labs.  Regular inspection and maintenance. |
| Release of corrosive substances | Spillage  Breach of container | No container to be opened in stores, only to be opened/used in designated areas in labs.  Regular inspection and maintenance. |

Where no hazard has been identified no classification has been made.

Material Safety Data Sheets (MSDS) for all chemicals are held in digital form on CD rom and are accessible via the School’s INTRANET and via our chemical suppliers at [www.Lennox.ie](http://www.Lennox.ie)

MSDS supplied with new deliveries are copied and made available to the academic end user when requested.

**STORAGE OF CHEMICALS**

The School of Science operates two chemical stores, one inside the building for day to day use which contains the minimum quantity necessary to allow for smooth running of classes and an external store for back up storage of larger quantities. Both stores were custom built following consultation with the local fire authorities and the Institutes architects.Both stores have fire suppression systems, fire detection devices, fire extinguishers, forced ventilation, wooden shelving, and flame proof cabinets where necessary. Access to the store is restricted to the Technical staff in the School. Any maintenance work is by permit to work signed by the Estates manager following consultation.

**Category 1 Explosive substances.**

The school of Science carries 40 substances which are deemed to be explosive as their most significant hazard (6.5 kgs) as defined by the U.S. Dept of the Treasury, Bureau of Alcohol, tobacco and Firearms. These chemicals are listed in appendix ii. They are stored under lock and key in the internal store.

**Category 2 Compressed Gases.**

The Institute has a custom built gas bunker external to the premises. It is sub divided into two compartments, combustible and non-combustible, an alarm panel in the chemistry prep room indicates any sudden loss of pressure or the need for a replacement cylinder. All combustible gas lines are fitted with flash-back arrestors and slam shut valves. All equipment is services annually by the installer and pressure tested.

Two cylinders of Nitrogen are used at various locations within the school and are stored on trollies or clamped to the bench when in use.

**Category 3 Flammable liquids.**

The School of Science carries approximately 100 litres in the internal store and 400 litres in the external store of flammable liquids as defined by a flash point of below 100’F (38.7’C). In the internal store they are stored in flame-proof cabinets on two levels. In the external store they are stored in the open on at ground level. The doorway of the external store is lipped to contain any spillage.

**Category 4 Flammable solids**

* 1. Readily combustible solids

The School of Science carries approximately 3. 5 kgs internally and 10 kg externally of readily combustible substances in flame proof cabinets.

4.2 Spontaneously combustible

The Institute defines Spontaneously combustible of Pyrophoric chemicals as materials which will ignite spontaneously in air at about 130’F.

The School of Science carries approximately 1.3 kg internally and 6 kg externally in flame-proof cabinet.

4.3 Dangerous when wet

The School of Science carries approximately 0.8 kg internally under lock and key

**Category 5 Oxidising substances**

The Institute defines Oxidising substances as ones that spontaneously evolve oxygen at room temperature or with slight heating or promote combustion. This class of chemicals includes peroxides,chlorates, perchlorates nitrates and permanganates.

Organic peroxides are deemed to have added hazard and are segregated.

5.1 Oxidising Substances

The School of Science carries approximately 10 kg internally and 25 kg externally. In both stores they are segregated in flameproof cabinets.

5.2 Organic Peroxides

The School of Science carries approximately 1.9 kg segregated under lock and key in a flameproof cabinet in the internal store.

**Category 6 Toxic substances**

The Institute recognizes a chemical to be toxic if it has been assigned an LD50 for oral exposure in rate of 50-500 mg/kg, for skin contact in rabbits of 200-100 mg/kg or for inhalation exposure in rats of 200-2000 ppm in air. Chemicals which have LD 50 lower than the range stated are deemed to be Acutely toxic.

Because of the age profile of our student body and to draw further attention to the hazards in using this category the School of Science further subdivides this category into:

6.1 Toxic chemicals as defined above.

6.2 Carcinogenic Chemicals i.e. any agent that can initiate or speed the development of malignant or potentially manignant tumors, malignant neoplasticproliferation of cells or cells that possess such material.

6.3 Reproductive hazards are substances which effect the reproductive capabilities including chromosomal damage (mutagens) and effects on the fetus (teratogens)

The School of Science carries approximately 25 kg internally and 60 kg externally of chemicals which fall into this category. Internally they are stored in locked wooden cabinets. In the external store they are stored on open shelves in a designated part of the store.

**Category 7 Corrosive substances**

The Institute deems corrosive any chemical which is highly corrosive to steel of which causes visible destruction or permanent changes in human skin tissue at the site of contact. The School of Science sub-divides this class into Acids and Bases.

The School of Science carries approximately 20 litres of Acids in a locked wooden press in the internal store and 60 litres in a separate external acid store, in polystyrene transport boxes.

15 litres/KG of bases are kept in the internal store in a locked wooden press and approximately 70 litres/KG is kept in the external chemical store in a designated section.

The balance of the chemical stock is kept on open shelves in alphabetical order in both stores.

**Handling of Chemicals**

The School of Science has adopted the following standard Operating Procedures for the routine use of chemicals as a guide to their safe use. MSDS for individual chemicals should be consulted by the academic staff member in charge of a class before permitting students to carry out practical work. The class requisition forms used in the School of Science include a section for the academic staff member to highlight any special hazard and /or disposal requirements for chemicals which they intend to use in either the class, project or research situation.

The SOP’s are followed by lists of the various categories in stock as of June 2002

Category 6

**TOXIC CHEMICALS**

**STANDARD OPERATING PROCEDURE**

DEFINITION OF CATEGORY

* Toxic chemicals are defined as those with an LD50 value for oral exposure in rats of 50- 500 mg/kg, for skin contact in rabbits of 200-100 mg/kg, or for inhalation exposure in rats of 200-2000 ppm/air.
* Highly toxic chemicals are defined as those with an LD50 value for oral exposure in rats of less than 50500 mg/kg, for skin contact in rabbits of less than 200100 mg/kg, or for inhalation exposure in rats of less than 2002000 ppm/air.

HAZARD DESCRIPTION

* Acutely toxic chemicals can cause severe illness and sometimes death.

PROTECTION PROCESS

* Good laboratory technique
* Appropriate shielding through use of personal protective equipment
* Use of fume hood
* Availability of eye wash station and safety shower PERSONAL PROTECTIVE EQUIPMENT
* Safety glasses/goggles (Wear chemical safety goggles when using small quantities or safety glasses or chemical safety goggles with face shield when using large quantities or when a splash potential exists.)
* Gloves should be worn when handling acutely toxic chemicals. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should consult the OEHS websitefor advice on chemical resistant gloves when direct or prolonged contact with hazardous chemicals is anticipated.
* Lab coats, closed toed shoes and long sleeved clothing should be worn when handling corrosive materials.
* Additional protective clothing should be worn if the possibility of skin contact is likely.

ENGINEERING/VENTILATION CONTROLS

* Manipulation of acutely toxic chemicals should be carried out in a fume hood whenever possible.
* Under certain conditions, acutely toxic chemicals can be used in a Biological Safety Cabinet. The biological safety cabinet is designed to remove the acutely toxic chemicals before the air is discharged into the environment. Acutely toxic chemicals that are volatile must not be used in a biological safety cabinet unless the cabinet is vented to the outdoors.
* Certain acutely toxic chemicals must be handled in a glove box rather than a fume hood. The lecturer in charge or the Science Safety Working Group will determine if this is required.
* For small quantities of acutely toxic chemicals, portable shields, which provide protection to all laboratory occupants, are acceptable.
* A safety shower and eyewash must be available and accessible when working with acutely toxic chemicals.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

* All acutely toxic chemicals must be clearly labeled with the correct chemical name.
* Do not store acutely toxic materials on high cabinets or shelves.
* Acutely toxic chemicals must be stored in a designated area.
* The room sign where acutely toxic chemicals are stored must contain a "Designated Areas Within" identifier.

SPILL AND ACCIDENT PROCEDURES

* Before beginning work with acutely toxic chemicals, develop emergency procedures which address response actions to fires, explosions, spills, injury to staff, or the development of signs and symptoms of overexposure. The procedures should address as a minimum the following:
* Who to contact: (School Office, and Technical Staff, Estates manager and Safety Officer,
* Principal investigator of the laboratory including evening phone number)
* The location of all safety equipment (showers, spill clean up supplies, eye wash, fire extinguishers, etc.)
* The method used to alert personnel in nearby areas of potential hazards
* Special first aid treatment required by the type of corrosive material(s) handled in the laboratory
* Anticipate spills by having clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any acutely toxic chemical.
* In the event of a spill, all personnel in the area should be alerted.
* Do not attempt to handle a spill of acutely toxic chemicals. Vacate the laboratory immediately and call for assistance. Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

* All materials contaminated with acutely toxic chemicals should be disposed of as a hazardous waste.
* Wherever possible, attempt to design research in a manner that reduces the quantity of waste generated.

SPECIAL APPROVAL REQUIRED

* The Science Safety Working Group must approve work with acutely toxic chemicals.
* You should notify the Office of the School of Science and the Institute’s Safety Officer prior to the initial use of acutely toxic substances. Notification is also required following significant changes in procedures or the quantity of materials used.

DECONTAMINATION

Personnel:

* Wash hands and arms with soap and water immediately after handling acutely toxic chemicals.

Area:

* Decontamination procedures vary depending on the material being handled. The toxicity of some materials can be neutralized with other reagents. All surfaces should be wiped with the appropriate cleaning agent following dispensing or handling.
* Waste materials generated should be treated as a hazardous waste.

Equipment:

* Decontaminate glassware, vacuum pumps, etc. before removing them from the designated area.

DESIGNATED AREA

* All locations within the laboratory where acutely toxic chemicals are handled should be demarcated with designated area caution and/or posted with designated area caution signs. This includes all fume hoods and bench tops where the acutely toxic chemicals are handled.
* Where feasible acutely toxic chemicals should be manipulated over plastic-backed disposable paper work surfaces. These disposable work surfaces minimize work area contamination and simplify clean up.
* The room sign for the laboratory must contain a "Designated Areas Within" identifier.

Category 5

**OXIDIZING CHEMICALS STANDARD OPERATING PROCEDURE**

DEFINITION OF CATEGORY

* Oxidizing chemicals are materials that spontaneously evolve oxygen at room temperature or with slight heating or promote combustion.
* This class of chemicals includes peroxides, chlorates, perchlorates, nitrates, and permanganates.
* Examples of strong oxidizers are listed at the end of this SOP. HAZARD DESCRIPTION
* Strong oxidizers are capable of forming explosive mixtures when mixed with combustible, organic or easily oxidized materials

PROTECTION PROCESS

* Good laboratory technique
* Appropriate shielding through use of personal protective equipment
* Use of fume hood
* Availability of eye wash station and safety shower PERSONAL PROTECTIVE EQUIPMENT
* Safety glasses/goggles (Wear chemical safety goggles when using small quantities or safety glasses or chemical safety goggles with face shield when using large quantities or when a splash potential exists.)
* Gloves should be worn when handling oxidizing chemicals. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should consult the OEHS websitefor advice on chemical resistant gloves when direct or prolonged contact with hazardous chemicals is anticipated.
* Lab coats, closed toed shoes and long sleeved clothing should be worn when handling oxidizing chemicals.
* Additional protective clothing should be worn if the possibility of skin contact is likely.

ENGINEERING/VENTILATION CONTROLS

* The use of certain concentrations of perchloric acid must be performed in a fume hood equipped with wash down facilities
* Safety shielding is required any time there is a risk of explosion, splash hazard or a highly exothermic reaction. All manipulations of oxidizing chemicals which pose this risk should occur in a fume hood with the sash in the lowest feasible position. Portable shields, which provide protection to all laboratory occupants are acceptable.
* A safety shower and eyewash must be available and accessible when working with acutely toxic chemicals.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

* Oxidizers should be stored in a cool and dry location.
* Keep oxidizers segregated from all other chemicals in the laboratory.
* Minimize the quantities of strong oxidizers stored in the laboratory.
* Never return excess chemicals to the original container. Small amounts of impurities may be introduced into the container which may cause a fire or explosion.

SPILL AND ACCIDENT PROCEDURES

* Before beginning work with oxidizing chemicals, develop emergency procedures which address response actions to fires, explosions, spills, injury to staff, or the development of signs and symptoms of overexposure. The procedures should address as a minimum the following:
* Who to contact: (School Office, and Technical Staff, Estates manager and Safety Officer)
* The location of all safety equipment (showers, spill clean up supplies, eye wash, fire extinguishers, etc.)
* The method used to alert personnel in nearby areas of potential hazards
* Special first aid treatment required by the type of corrosive material(s) handled in the laboratory
* Anticipate spills by having clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any oxidizing chemicals.
* Spill control materials for oxidizers are designed to be inert and will not react with the reagent.
* Never use paper towels or other inappropriate materials which are combustible.
* The waste materials generated during spill cleanup may pose a flammability risk and should not remain in the laboratory overnight unless it is stored in an appropriate container.
* In the event of a spill, all personnel in the area should be alerted.
* Do not attempt to handle a large spill of oxidizing chemicals. Vacate the laboratory immediately and call for assistance. Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

* All materials contaminated with oxidizing chemicals pose a fire hazard and should be disposed of as hazardous waste.
* Do not let contaminated wastes remain in the laboratory overnight unless proper containers are provided.

SPECIAL APPROVAL REQUIRED

* You should notify the Safety Officer prior to the initial use of perchloric acid.

DECONTAMINATION

* Personnel: Wash hands and arms with soap and water immediately after handling oxidizing chemicals.
* Area: Carefully clean work area after use. Paper towels or similar materials contaminated with strong oxidizing chemicals may pose a fire risk.

DESIGNATED AREA

* No

EXAMPLES OF STRONG OXIDIZERS

* Ammonium perchlorate
* Ammonium permanganate
* Barium peroxide
* Bromine
* Calcium chlorate
* Calcium hypochlorite
* Chlorine trifluoride
* Chromium anhydride
* Chromic acid
* Dibenzoyl peroxide
* Fluorine
* Hydrogen peroxide
* Mangesium peroxide
* Nitrogen trioxide
* Perchloric acid
* Potassium bromate
* Potassium chlorate
* Potassium peroxide
* Propyl nitrate
* Sodium chlorate
* Sodium chlorite
* Sodium perchlorate
* Sodium peroxide

Source: CRC Handbook of Laboratory Safety, 3rd edition.

Category 7 Acids

**ACID SOLUTIONS**

**STANDARD OPERATING PROCEDURE**

DEFINITION OF CATEGORY

* Acids: acetic, hydrochloric, nitric, phosphoric, sulfuric, phosphoric

HAZARD DESCRIPTION

* Topical exposure to acids may result in burns on the skin. Potential exposure occurs when handling aqueous acid solutions.

PROTECTION PROCESS

* Good laboratory technique
* Appropriate shielding through use of personal protective equipment
* Use of fume hood when dealing with concentrated (fuming) acid

PERSONAL PROTECTIVE EQUIPMENT

* Safety goggles (Wear chemical safety goggles when using small quantities or safety glasses or chemical safety goggles with face shield when using large quantities.)
* Nitrile, PVC, or neoprene gloves
* Rubber, neoprene, or PVC apron (when using large quantities and splash potential exists) ENGINEERING/VENTILATION CONTROLS
* Use concentrated acids in fume hood.
* A safety shower and eyewash must be available and accessible when working with corrosive liquids.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

* Store mineral acids together, separate from oxidizing agents and organic materials.
* Store acetic acid and other organic acids with the combustible organic liquids.

SPILL AND ACCIDENT PROCEDURES

* Skin exposure: Rinse affected skin with plenty of water while removing contaminated clothing and shoes. Rinse for at least 15 minutes. Seek medical attention.
* Eye exposure: Splashes may cause tissue destruction. Wash eyes for at least 15 minutes, lifting the upper and lower eyelids occasionally. Seek medical attention immediately.
* Small spills:. Cover spill with sodium carbonate or bicarbonate. When reaction stops pickup with damp sponge or paper towels. (Do not attempt cleanup if you feel unsure of your ability to do so or if you perceive the risk to be greater than normal laboratory operations.)
* Large Spills: Notify others in area of spill. Turn off ignition sources in area. Evacuate area and post doors to spill area. Call the School office for assistance. Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive. Restrict persons from area of spill or leak until cleanup is complete. Remain in area in safe location to assist with response.

WASTE DISPOSAL

* Diluted solutions may be poured down the sink accompanied by copious amounts of water.
* Old, concentrated solutions should be disposed of through as hazardous waste.

SPECIAL APPROVAL REQUIRED

* No DECONTAMINATION
* Use sodium bicarbonate and water.

DESIGNATED AREA

* No

Category 3

**FLAMMABLE LIQUIDS STANDARD OPERATING PROCEDURE**

DEFINITION OF CATEGORY

* Flammable liquids are chemicals that have a flash point below 100oF (38.7o C) and a vapor pressure that does not exceed 40 psig at 100oF.

HAZARD DESCRIPTION

* Contact with flame or hot surfaces will result in a fire.

PROTECTION PROCESS

* Good laboratory technique
* Appropriate shielding through use of personal protective equipment
* Experiments involving greater than 500 mL of flammable liquids should be carried out in a fume hood.

PERSONAL PROTECTIVE EQUIPMENT

* Eye protection in the form of safety glasses must be worn at all times when handling flammable liquids. Ordinary (street) prescription glasses do not provide adequate protection.
* Gloves should be worn when handling flammable liquids. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should consult the OEHS website for advice on chemical resistant glove selection when direct or prolonged contact with hazardous chemicals is anticipated.
* Lab coats, closed toed shoes and long sleeved clothing should be worn when handling flammable liquids. Additional protective clothing should be worn if the possibility of skin contact is likely.
* Safety shielding is required any time there is a risk of explosion, splash hazard or a highly exothermic reaction. All manipulations of flammable liquids which pose this risk should occur in a fume hood with the sash in the lowest feasible position. Safety shielding is required any time there is a risk of explosion, splash hazard or a highly exothermic reaction. Portable shields, which provide protection to all laboratory occupants, are acceptable.

ENGINEERING/VENTILATION CONTROLS

* A safety shower and eyewash must be available and accessible when working with corrosive liquids. Bottle-type eyewash stations are not acceptable.
* A fume hood should be used when handling volumes of flammable liquids larger than 500 mL.
* Manipulation of flammable liquids outside of a fume hood may require special ventilation controls in order to minimize exposure to the material. Fume hoods provide the best protection against exposure to flammable liquids in the laboratory and are the preferred ventilation control device. Always attempt to handle large quantities of flammable liquids in a fume hood. If your research does not permit the handing of large quantities of flammable liquids in your fume hood, contact the Office of Environmental Health and Safety to review the adequacy of all special ventilation.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

* The storage of flammable and combustible liquids in a laboratory must be kept to the minimum needed for research and/or operations. If more than 25 lts s of flammables are present outside of safety cans per 100 square feet of area, a flammable-liquids storage cabinet is required. Flammable-liquids storage cabinets are not intended for the storage of highly toxic materials, acids, bases, compressed gases or pyrolytic chemicals.
* All flammable liquids must be clearly labelled with the correct chemical name. Handwritten labels are acceptable; chemical formulas and structural formulas are not acceptable.
* Where feasible (if the quality of the solvent will not be adversely affected) transfer flammable liquids from glass bottles into metal safety cans.
* Mechanical vacuum pumps must be protected using cold traps and, where appropriate, filtered to prevent particulate release. The exhaust for the pumps must be vented into an exhaust hood. Vacuum pumps should be rated for use with flammable liquids.

SPILL AND ACCIDENT PROCEDURES

* Anticipate spills by having the appropriate clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any flammable liquids. Spill supplies for flammable liquids are designed to control the liquid portion of the spill and minimize the production of flammable vapors. Never use paper towels on large spills of flammable liquids because it exacerbates vapor production.
* In the event of a spill all personnel in the area should be alerted. Turn off all sources of ignition. Do not attempt to handle a large spill of flammable liquids. Vacate the laboratory immediately and call for assistance Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

* Collect waste in an approved safety container and record date, chemical, and amount.

SPECIAL APPROVAL REQUIRED

* No

DECONTAMINATION

* Wash hands and arms with soap and water immediately following any skin contact with flammable liquids.

DESIGNATED AREA

Category 7 -all

**CORROSIVE CHEMICALS - ACIDS, BASES AND DEHYDRATING AGENTS**

**STANDARD OPERATING PROCEDURE**

DEFINITION OF CATEGORY

* Chemicals that are highly corrosive to steel.
* The major classes of corrosives include strong acids, bases, and dehydrating agents.

HAZARD DESCRIPTION

* Corrosive chemicals cause visible destruction or permanent changes in human skin tissue at the site of contact.

PROTECTION PROCESS

* Good laboratory technique
* Appropriate shielding through use of personal protective equipment
* Use of fume hood
* Availability of eye wash station and safety shower

PERSONAL PROTECTIVE EQUIPMENT

* Safety glasses/goggles (Wear chemical safety goggles when using small quantities or wafety glasses or chemical safety goggles with face shield when using large quantities or when a splash potential exists.)
* Gloves should be worn when handling corrosive chemicals. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should consult the OEHS website for advice on chemical resistant gloves.
* Lab coats, closed toed shoes and long sleeved clothing should be worn when handling corrosive materials.
* Additional protective clothing should be worn if the possibility of skin contact is likely.

ENGINEERING/VENTILATION CONTROLS

* Manipulation of corrosive substances should be carried out in a fume hood if corrosive vapor production is anticipated.
* A safety shower and eyewash must be available and accessible when working with corrosive liquids.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

* Segregate the various types of corrosives. Separate acids and bases. Liquids and solids should also be separated.
* Specially designed corrosion resistant cabinets should be used for the storage of large quantities of corrosive materials.
* Store corrosives on plastic trays.
* All corrosive chemicals must be clearly labeled with the correct chemical name.
* Do not store corrosive materials on high cabinets or shelves.

SPILL AND ACCIDENT PROCEDURES

* Before beginning work with large amounts of corrosive chemicals, develop emergency procedures which address response actions to fires, explosions, spills, injury to staff, or the development of signs and symptoms of overexposure. The procedures should address as a minimum the following:
* Who to contact: (School Office, and Technical Staff, Estates manager and Safety Officer, ,
* Principal investigator of the laboratory including evening phone number)
* The location of all safety equipment (showers, spill clean up supplies, eye wash, fire extinguishers, etc.)
* The method used to alert personnel in nearby areas of potential hazards
* Special first aid treatment required by the type of corrosive material(s) handled in the laboratory
* Anticipate spills by having clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any corrosive chemical. Corrosive spill controls neutralize the hazardous nature of the spilled material. Acids and bases require different types of spill control materials.
* In the event of a spill all personnel in the area should be alerted.
* If the incident involves Hydrofluoric acid (HF), seek immediate medical attention.
* If there is any doubt about the severity of the injury, seek immediate medical attention.
* Do not attempt to handle a large spill of corrosive materials. Vacate the laboratory immediately and call for Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

* Most corrosive materials are hazardous wastes.

SPECIAL APPROVAL REQUIRED

* No

DECONTAMINATION

Personnel:

* Immediately flush contaminated area with copious amounts of water after contact with corrosive materials.
* Remove any jewelry to facilitate removal of chemicals.
* If a delayed response is noted, report immediately for medical attention. Be prepared to detail what chemicals were involved.

Area:

* Decontamination procedures vary depending on the material being handled. The corrosivity of some materials can be neutralized with other reagents. Special neutralizing agents should be on hand to decontaminate areas.

DESIGNATED AREA

Not applicable

Category 6 – 6.3 Reproductive

**REPRODUCTIVE TOXINS STANDARD OPERATING PROCEDURE**

DEFINITION OF CATEGORY

* Reproductive hazards are substances which affect the reproductive capabilities including chromosomal damage (mutagens) and effects on the fetus (teratogens). A list of some reproductive hazards is included at the end of this SOP.

HAZARD DESCRIPTION

* Reproductive hazards can cause birth defects.

PROTECTION PROCESS

* Good laboratory technique
* Appropriate shielding through use of personal protective equipment
* Use of fume hood
* Availability of eye wash station and safety shower PERSONAL PROTECTIVE EQUIPMENT
* Safety glasses/goggles (Wear chemical safety goggles when using small quantities or safety glasses or chemical safety goggles with face shield when using large quantities or when a splash potential exists.)
* Gloves should be worn when handling reproductive toxins. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should consult the OEHS websitefor advice on chemical resistant gloves when direct or prolonged contact with hazardous chemicals is anticipated.
* Lab coats, closed toed shoes and long sleeved clothing should be worn when handling oxidizing chemicals.
* Additional protective clothing should be worn if the possibility of skin contact is likely.

ENGINEERING/VENTILATION CONTROLS

* Manipulation of reproductive hazards should be carried out in a fume hood.
* Under certain conditions, reproductive toxins can be used in a biological safety cabinet. The biological safety cabinet is designed to remove the reproductive toxins before the air is discharged into the environment. Reproductive toxins that are volatile must not be used in a biological safety cabinet unless the cabinet is vented to the outdoors.
* Certain reproductive hazards must be handled in a glove box rather than a fume hood. The Division of Environmental Health and Safety or the Principal Investigator will determine if this is required.
* For small quantities of reproductive toxins, portable shields, which provide protection to all laboratory occupants, are acceptable.
* A safety shower and eyewash must be available and accessible when working with reproductive toxins.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

* Reproductive hazards must be stored in a designated area.

SPILL AND ACCIDENT PROCEDURES

* Before beginning work with reproductive toxins, develop emergency procedures which address response actions to accidental exposure from fires, explosions, or spills. The procedures should address as a minimum the following:
* Who to contact: (School Office, and Technical Staff, Estates manager and Safety Officer, ,
* Principal investigator of the laboratory including evening phone number)
* The location of all safety equipment (showers, spill clean up supplies, eye wash, fire extinguishers, etc.)
* The method used to alert personnel in nearby areas of potential hazards
* Special first aid treatment required by the type of corrosive material(s) handled in the laboratory
* Anticipate spills by having clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any reproductive toxin.
* In the event of a spill, all personnel in the area should be alerted.
* Do not attempt to handle a large spill of reproductive toxins. Vacate the laboratory immediately and call for
* Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

* All materials contaminated with reproductive hazards should be disposed of as a hazardous waste.
* Wherever possible, attempt to design research in a manner that reduces the quantity of waste generated.

SPECIAL APPROVAL REQUIRED

* You should notify the Safety Officer prior to the initial use of reproductive hazards.
* Notification is also required following significant changes in procedures or the quantity of materials used.

DECONTAMINATION

Personnel:

* Wash hands and arms with soap and water immediately after handling reproductive toxins.

Area:

* Decontamination procedures vary depending on the material being handled. The toxicity of some materials can be neutralized with other reagents. All surfaces should be wiped with the appropriate cleaning agent following dispensing or handling.
* Waste materials generated should be treated as hazardous waste.

Equipment:

* Decontaminate glassware or equipment before removing them from the designated area.

DESIGNATED AREA

* All locations within the laboratory where reproductive hazards are handled should be demarcated with designated area caution signs. This includes all fume hoods and bench tops where the reproductive hazards are handled.
* Where feasible, reproductive hazards should be manipulated over plastic-backed disposable paper work surfaces. These disposable work surfaces minimize work area contamination and simplify clean up.
* The room sign for the laboratory must contain a "Designated Areas Within" identifier.

EXAMPLES OF REPRODUCTIVE TOXINS

* Acrylic acid
* Aniline
* Benzene
* Cadmium
* Carbon disulfide
* N,N-dimethylacetamide
* Dimethylformamide (DMF)
* Dimethyl sulfoxide (DMSO)
* Diphenylamine
* Estradiol
* Formaldehyde
* Formamide
* Hexachlorobenzene
* Iodoacetic acid
* Lead compounds Mercury compounds
* Nitrobenzene
* Nitrous oxide
* Phenol
* Polychlorinated and polybrominated biphenyls
* Toluene
* Vinyl chloride
* Xylene

Category 6 – 6.2 Carcinogens

**CARCINOGENS STANDARD OPERATING PROCEDURE**

DEFINITION OF CATEGORY

* A carcinogen commonly describes any agent that can initiate or speed the development of malignant or potentially malignant tumors, malignant neoplastic proliferation of cells, or cells that possess such material.

HAZARD DESCRIPTION

* Carcinogens hazards can cause cancer.

PROTECTION PROCESS

* Good laboratory technique
* Appropriate shielding through use of personal protective equipment
* Use of fume hood
* Availability of eye wash station and safety shower

PERSONAL PROTECTIVE EQUIPMENT

* Safety glasses/goggles (Wear chemical safety goggles when using small quantities or safety glasses or chemical safety goggles with face shield when using large quantities or when a splash potential exists.)
* Gloves should be worn when handling carcinogens. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should consult the OEHS website for advice on chemical resistant gloves when direct or prolonged contact with hazardous chemicals is anticipated.
* Lab coats, closed toed shoes and long sleeved clothing should be worn when handling carcinogens.
* Additional protective clothing should be worn if the possibility of skin contact is likely.

ENGINEERING/VENTILATION CONTROLS

* Manipulation of carcinogens should be carried out in a fume hood.
* Under certain conditions, carcinogens can be used in a biological safety cabinet. The biological safety cabinet is designed to remove the carcinogens before the air is discharged into the environment. Carcinogens that are volatile must not be used in a biological safety cabinet unless the cabinet is vented to the outdoors.
* A safety shower and eyewash must be available and accessible when working with carcinogens.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

* Carcinogens must be stored in a designated area.

SPILL AND ACCIDENT PROCEDURES

* Before beginning work with carcinogens, develop emergency procedures which address response actions to accidental exposure from fires, explosions, or spills. The procedures should address as a minimum the following:
* Who to contact: (School Office, and Technical Staff, Estates manager and Safety Officer, ,
* Principal investigator of the laboratory including evening phone number)
* The location of all safety equipment (showers, spill clean up supplies, eye wash, fire extinguishers, etc.)
* The method used to alert personnel in nearby areas of potential hazards
* Special first aid treatment required by the type of corrosive material(s) handled in the laboratory
* Anticipate spills by having clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any carcinogens.
* In the event of a spill, all personnel in the area should be alerted.
* Do not attempt to handle a large spill of carcinogens. Vacate the laboratory immediately and call for assistance
* Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

* All materials contaminated with carcinogens should be disposed of as a hazardous waste.
* Wherever possible, attempt to design research in a manner that reduces the quantity of waste generated.

SPECIAL APPROVAL REQUIRED

* You should notify the Safety Officer prior to the initial use of carcinogens.
* Notification is also required following significant changes in procedures or the quantity of materials used.

DECONTAMINATION

Personnel:

* Wash hands and arms with soap and water immediately after handling carcinogens.

Area:

* Decontamination procedures vary depending on the material being handled. The toxicity of some materials can be neutralized with other reagents. All surfaces should be wiped with the appropriate cleaning agent following dispensing or handling.
* Waste materials generated should be treated as hazardous waste.

Equipment:

* Decontaminate glassware or equipment before removing them from the designated area.

DESIGNATED AREA

* All locations within the laboratory where carcinogens are handled should be demarcated with designated area caution signs. This includes all fume hoods and bench tops where the carcinogens are handled.
* Where feasible, carcinogens should be manipulated over plastic-backed disposable paper work surfaces. These disposable work surfaces minimize work area contamination and simplify clean up.
* The room sign for the laboratory must contain a "Designated Areas Within" identifier.

Category 4- 4.2 & 4.3 Spontaneous/Pyrophoric

**SPONTANEOUSLT COMBUSTIBLE OR PYROPHORIC CHEMICALS**

**STANDARD OPERATING PROCEDURE**

DEFINITION OF CATEGORY

* Pyrophoric chemicals are liquids and solids that will ignite spontaneously in air at about 130’ F. A listing of some pyrophoric chemicals is at the end of this SOP.

HAZARD DESCRIPTION

* Pyrophoric chemicals can explode or produce a fire.

PROTECTION PROCESS

* Good laboratory technique
* Appropriate shielding through use of personal protective equipment
* Use of fume hood
* Availability of eye wash station and safety shower PERSONAL PROTECTIVE EQUIPMENT
* Safety glasses/goggles (Wear chemical safety goggles when using small quantities or safety glasses or chemical safety goggles with face shield when using large quantities or when a splash potential exists.)
* Gloves should be worn when handling pyrophoric chemicals. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should consult the OEHS website for advice on chemical resistant gloves when direct or prolonged contact with hazardous chemicals is anticipated.
* Lab coats, closed toed shoes and long sleeved clothing should be worn when handling pyrophoric chemicals.
* Additional protective clothing should be worn if the possibility of skin contact is likely.

ENGINEERING/VENTILATION CONTROLS

* Many pyrophoric chemicals release noxious or flammable gases and should be handled in a hood.
* Some pyrophoric materials are stored under kerosene (or other flammable solvents), therefore the use of a fume hood is required to prevent the release of flammable vapors in the laboratory.
* Glove boxes may be used to handle pyrophoric chemicals if inert or dry atmospheres are required.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

* All pyrophoric chemicals must be clearly labelled with the correct chemical name.
* Pyrophoric chemicals should be stored under an atmosphere of inert gas or under kerosene as appropriate.
* Do not store pyrophoric chemicals with flammable materials or in a flammable-liquids storage cabinet.
* Store these materials away from sources of ignition. Minimize the quantities of pyrophoric chemicals stored in the laboratory.
* Never return excess chemicals to the original container. Small amounts of impurities may be introduced into the container which may cause a fire or explosion.

SPILL AND ACCIDENT PROCEDURES

* Before beginning work with pyrophoric chemicals, develop emergency procedures which address response actions to accidental exposure from fires, explosions, or spills. The procedures should address as a minimum the following:
* Who to contact: (School Office, and Technical Staff, Estates manager and Safety Officer, ,
* The location of all safety equipment (showers, spill clean up supplies, eye wash, fire extinguishers, etc.)
* The method used to alert personnel in nearby areas of potential hazards
* Special spill control materials required by the type of corrosive material(s) handled in the laboratory
* Anticipate spills by having clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any pyrophoric chemicals.
* In the event of a spill, all personnel in the area should be alerted.
* Do not attempt to handle a large spill of pyrophoric chemicals. Vacate the laboratory immediately and call for assistance
* Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

* All materials contaminated with pyrophoric chemicals should be disposed of as a hazardous waste.
* Alert the Safety Officer if you generate wastes contaminated with pyrophoric chemicals. These wastes may pose a flammability risk and should not remain in the laboratory overnight.

SPECIAL APPROVAL REQUIRED

* No.

DECONTAMINATION

* Wash hands and arms with soap and water immediately following any skin contact with pyrophoric chemicals.

DESIGNATED AREA

* No.

EXAMPLES OF PYROPHORIC COMPOUNDS

Grignard reagents, RMgX

Metal alkyls and aryls, such as RLi, RNa, R3Al, R2Zn Metal carbonyls, such as Ni(CO)4, Fe(CO)5, Co2(CO)8 Alkali metals such as Na, K

Metal powders, such as Al, Co, Fe, Mg, Mn, Pd, Pt, Ti, Sn, Zn, Zr Metal hydrides, such as NaH, LiAlH4

Nonmetal hydrides, such as B2H6 and other boranes, PH3, AsH3 Nonmetal alkyls, such as R3B, R3P, R3As

Phosphorus (white)

**Common Practical Chemical Safety Information**

This table details basic risk information on some common chemicals in use in the Department of Science.

The list is not exhaustive and is intended as a quick reference for initial information, MSDS should be consulted for full details if in doubt and for all chemicals not listed here.







# Appendix 7: Hazardous Waste Policy (Draft)

**Introduction**

Letterkenny Institute of Technology operates 10 teaching laboratories and 4 research laboratories involved in various areas of Science. All departments, staff, researchers and students must take into consideration the disposal of waste arising from any laboratory based practices within the Institute.

Almost everything left at the end of an experiment is considered to be waste. Choosing the proper disposal route for this waste is essential to ensure the safety of others and our environment. This policy intends to inform you how **you** should deal with **your** laboratory waste.

All waste produced by Institute laboratories must be disposed of in a safe and legally compliant manner. All Institute waste must be disposed of via a licensed contractor who is approved for the transport and disposal of the types of waste being handled. Failure to do so may leave the Institute at risk of prosecution.

The Institute has prepares a (Draft) Policy on the Safe Storage and Use of Chemicals which includes recommendations on the disposal of seven classes of chemicals. The Department of Science has joined the CLEAPSS organisation and has placed HAZCARDS in each laboratory area. The HAZCARDS include information on the disposal of small quantities of residual chemicals following practical classes.

Laboratory waste materials must be separated into ‘hazardous’ and ‘non hazard’ materials. The term is used to asses a materials ability to damage the environment, and is not related to its potential impact on human health, remember waste electronic instruments/equipment are considered to be a hazardous waste, yet represent no heath risk to humans. If there is any confusion as to whether a waste material is hazardous or not the Institute’s Safety Officer should be consulted. In cases where a question as to a waste’s status arises the assessment of what constitutes a hazardous or non hazardous waste must be left to a specialist.

As a rule the following should be considered as hazardous wastes:

* Any material contaminated or potentially contaminated with an infectious agent (unless it has been suitably treated to eliminate the infectious agent e.g. by autoclaving).
* All human tissues, blood and related swabs and wipes from the Department of Nursing or Science laboratories.
* Animal tissue and dressings from veterinary Nursing Room or Science laboratories.
* Microbiological cultures.
* Potentially infected waste from research labs.
* Most chemical wastes.
* Most electrical wastes.
* Contaminated sharps.
* Empty unclean containers, the previous contents of which are deemed to be hazardous wastes.

**Persons at Risk:**

If waste material is handled or stored off in an unsafe manner then all persons in the area are at risk from the hazards exhibited by the waste materials, be they chemical or biological. If waste material is not disposed of in accordance with legislative requirements then the Institute and individuals are at risk of prosecution.

**Control measures required to reduce Risk**

**Biological Wastes:**

1. All wastes considered to be contaminated with biological material must be disposed of in an appropriate manner using a licensed service provider.
2. All waste which is potentially ‘infectious’ is considered to be hazardous waste and must be disposed off accordingly.
3. The following can be considered to be hazardous wastes:
   * All human tissues, blood and related swabs and wipes from the Department of Nursing or Science laboratories.
   * Animal tissue and dressings from veterinary Nursing Room or Science laboratories.
   * Contaminated needles, glass, instruments, etc.
   * Microbiological cultures
   * Potentially infected waste from research labs
4. All sharps must go into suitable sharps bins for disposal. Sharps include broken glassware, blades and syringe tips. Sharps must never be placed into normal bins.
5. All classes of Genetically Modified Organisms other than Class 1 require inactivation (chemical or physical) before leaving site.
6. It is recommended that all biological waste is treated (chemically or physically) before it leaves the Institute in order to render it safe.
7. Biological waste subjected to long term storage must be stored in a secure area. If this area is outside then waterproof sealed or closed containers must be used to store the waste material.

**Chemical Wastes:**

1. Almost all chemical waste is hazardous.
2. Chemical waste should be disposed off promptly and on a regular basis.
3. Chemical waste should not be allowed to accumulate.
4. Different types of chemical wastes should be segregated where the opportunity arises, e.g. do not mix halogenated with non halogenated solvents if you can avoid it; always separate mercury containing wastes from all other wastes.
5. Do not mix chemical wastes indiscriminately, it makes disposal difficult.
6. Do not mix incompatible wastes together.
7. All chemical waste containers must be clearly labelled as to their contents; the use of expressions such as ‘waste solvents’ is not sufficient.
8. Waste labels should also be renewed as appropriate as they may become torn or unreadable over time.
9. Waste containers should also be labelled with the date of filling and the name of laboratory where the waste originated if possible.
10. All sharps must go into suitable sharps bins for disposal. Sharps include broken contaminated glassware. Sharps must never be placed into normal bins.
11. Where appropriate similar chemicals should be bulked up into larger containers,

e.g. bulk compatible waste solvents into 200l drums if possible.

1. Researchers must ensure that all ‘products’ of research are properly labelled and their properties are fully understood and recorded
2. All persons should be aware of the potential for chemical waste materials to become unstable if left for long periods, e.g. picric acid; 2,4-dinitrophenol; isopropyl ether.
3. Chemical waste must always be stored in a safe manner commensurate with its properties.

**Empty Chemical Containers:**

1. Containers which have been in direct contact with chemical agents e.g. Winchesters are considered to be a hazardous waste and must be disposed of as if they were full.
2. However, if such containers are ‘triple rinsed’ when empty and all warning labels are removed they may then be classed as clean and container sent for recycling / disposal.
3. The washings generated by this process may be suitable for running down the sink or may require offsite disposal – further information is available from the Institute’s Safety Officer*.*
4. Prior approval must be obtained from the Technical Officer in the laboratory before running any material down a sink.
5. Outer packaging (card/plastic) that has not come into direct contact with a chemical agent can be disposed off, through the non-hazardous waste route, as long as any chemical names and labels have been blanked off the pack and are unreadable.

**Non-Hazardous Wastes:**

1. Non-hazardous wastes are ‘normal’ type wastes which are not contaminated with any biological or chemical material. Items such as paper towels, tissues, food waste, etc. which does not look like ‘laboratory waste’ should be sent for recycling or placed into a bin with other general wastes. It is good practice to locate bins for non-hazardous wastes outside of laboratories and to use clear plastic bags so that the contents can be easily seen and confirmed as non-hazardous prior to disposal.

**Risk Assessment:**

measures

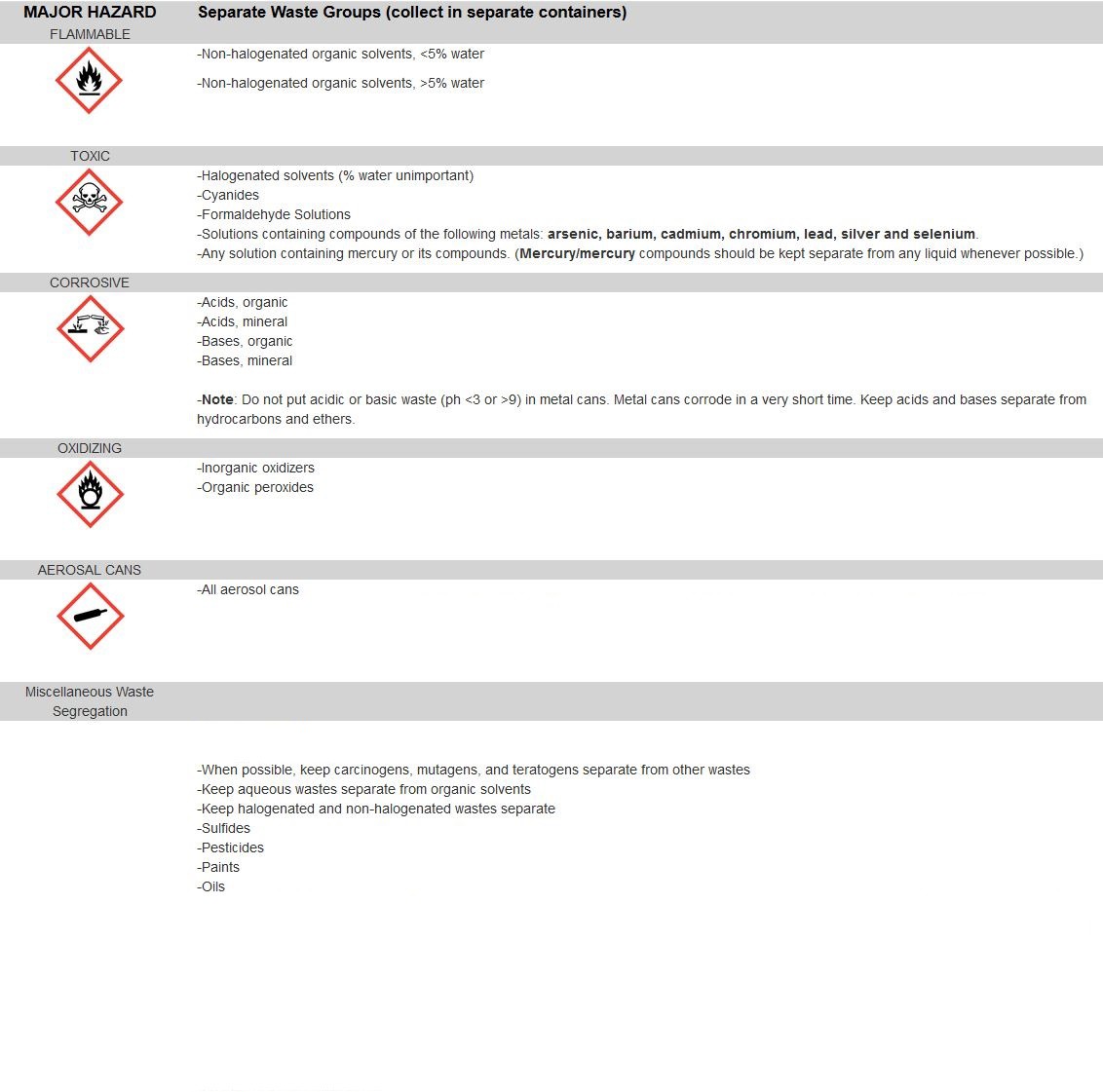
|  |  |  |
| --- | --- | --- |
| Probability Rating | Outcome Rating | Risk Rating |
| Before Control  Likely | Harmful | Moderate Risk |
| After Control  Unlikely | Harmful | Acceptable Risk |
| measures | | |

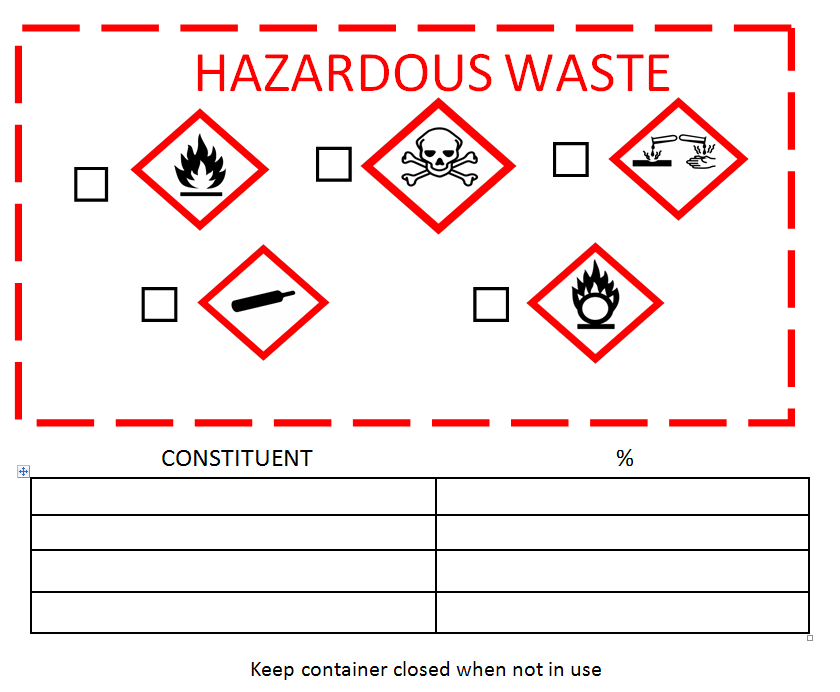
**Segregation Guidelines for Hazardous (Chemical) Waste**

In order to minimise the chances of incompatible materials being mixed together and to keep disposal costs down. Certain types of chemicals separated at the time of collection.

When combining different materials, refer to the chemical risk assessment provided for the class or experiment, always check the SDS to be sure they are compatible materials, Check with the lecturer/technical officer or other competent person, or DGSA contractor for guidance.

Keep the following groups in separate containers and use the associated pictogram to identify the hazard group on the label.

**USE THE LABELS SUPPLIED AND IDENTIFY COMPONENTS AS ACCURATELY AS POSSIBLE**



# Appendix 8: Lone/Out of Hours Working Guidance (Draft)

**Introduction**

This guidance has been developed to ensure that any lone/out of hours work that has to take place in Letterkenny Institute of Technology is planned and carried out in safe manner. This guidance document covers all staff and students of LYIT, whether academic or support, research or maintenance and any contractors employed by the Institute. Letterkenny Institute of Technology strongly recommends that in the interest of health, and safety, lone/out of hours work should only be undertaken when absolutely necessary and no other alternatives are available. Please note\* unsupervised out of hours work by undergraduate students is strictly prohibited by each of the Institutes Schools.

**Definitions**

***Normal Working Hours***

8 a.m. to 6 p.m. Monday to Friday except public and fixed holidays. On most Saturdays during term time, to facilitate the library and project work in the computer rooms the building is open from 10 am to 5 pm

***Lone/Out of Working Hours***

Lone/out of working hours working may be defined as: any work undertaken outside 8 am – 6 pm Monday to Saturday and any work undertaken on, Sundays & Bank Holidays in where there is lone occupancy.

All buildings must be vacated at closing time to facilitate “lock up”. At Christmas and Easter, all buildings will be closed for a specified number of days. Access will only be granted under exceptional circumstances by pre-arrangement with the Estates Office either on an individual case by case basis or through standing arrangements e.g. Research Building.

***Lone Working***

Lone workers are those who work by themselves without close or direct supervision. Anybody who works alone, including contractors, self-employed people and staff, is classed as a lone worker.

Note: Security Personnel based on campus overnight make arrangements with security mobile patrol who visit the site on a regular basis throughout the night.

**Employers Responsibility**

Under the Safety Health and Welfare at Work Act 2005 every employer shall ensure, so far as is reasonably practicable the safety, health an welfare at work of his or her employees, including lone workers.

In addition section 19 of the Safety, Health and Welfare at Work Act 2005 requires the employer to undertake risk assessments to identify the hazards and risks that employees may be exposed to and thereafter implement necessary controls to eliminate or minimise the risk to employees.

If the risk assessment shows that it is not possible for the work to be done safely by a lone worker, arrangements for providing help or backup should be put in place.

**Out of Hours & Lone workers / Employees responsibility**

The employer holds the main responsibility for protecting the safety and health of lone workers. However, lone workers themselves have a responsibility to help their employer fulfil this duty, and so they must:

* Take reasonable care to look after their own safety and health
* Safeguard the safety and health of other people affected by their work
* Co-operate with their employer’s safety and health procedures
* Use tools and other equipment properly, in accordance with any relevant instructions and training they have been given
* Not misuse equipment provided for their safety and health
* Report all accidents, injuries, near-misses and other dangerous occurrences

**Planning for Safe Out of Hours/Lone Working**

Heads of School/Function are responsible for approving and planning for out of hours/lone work activities and they should ensure a risk assessment for out of hours/lone working is completed.

Risk Assessment should address the following areas:

* Identify persons at risk i.e. out of hours/lone workers
* Identify the hazards
* Assess the risk
* Put controls in place to eliminate or reduce the risk

**Hazards** that out of hours or lone workers may encounter include, but are not limited to:

* accidents or emergencies arising out of the work, including inadequate provision of first aid
* sudden illnesses
* physical violence from other persons
* hazards from the work activity taking place

**Examples of control measures to minimise the risk to lone workers:**

The risk assessment should prescribe control measures to be implemented in order to eliminate/minimise the identified risks. Such control measures may include:

* communication strategy is very important: e.g. telephone or sign in with security
* controlled periodic checks
* instruction in proper procedures e.g. code words for potentially violent situations when combined with phone communication to security
* use of Personal Protective Equipment (PPE)
* access to first-aid kits and training arrangements
* implementing standard operating procedures (SOP’s)
* implementing correct incident reporting procedures
* informing estates & security staff of out of hours work being planned
* emergency preparedness e.g. fire safety, evacuation procedure, contact details

**Issues to be considered when planning safe working arrangements for lone workers:**

1. *Can the risks of the job be adequately controlled by one person?*

Lone workers should not be at more risk than other employees. This may require extra risk control measures. Precautions should take account of normal work and foreseeable emergencies, e.g. fire, illness and accidents. Employers should identify situations where people work alone and ask questions such as:

* Does the workplace present a special risk to the lone worker?
* Is there a risk of violence?
* Are women especially at risk if they work alone?
* Are young workers especially at risk if they work alone?

1. *Is the person medically fit and suitable to work alone?*

Check that lone workers have no medical conditions which may make them unsuitable for working alone. Seek medical opinion if necessary.

1. *What training is required to ensure competency in safety matters?*

Training is important where there is limited supervision to control, guide and help in situations of uncertainty. Lone workers need to be sufficiently experienced and to understand the risks and precautions fully. Heads of School/Function should set the limits to what can and cannot be done while working alone. They should ensure staff are competent to deal with circumstances that are new, unusual or beyond the scope of training.

1. *How will the person be supervised?*

Although lone workers cannot be subject to constant supervision, it is still an employer’s duty to ensure their safety and health at work. Supervision can help to ensure that employees understand the risks associated with their work and that the necessary safety precautions are carried out. Supervision of safety and health can often be carried out when checking the progress of the work; it may take the form of periodic visits by Heads of School/Function combined with discussions in which health and safety issues are raised.

The extent of supervision required depends on the risks involved and the ability of the lone worker to identify and handle safety and health issues. The level of supervision required is a Head of School/Function decision, which should be based on the findings of risk assessment, i.e. the higher the risk, the greater the level of supervision required.

For further information on Out of Hours/Lone working please see documents listed below:

**The following documents are useful for reference and guidance for this guidance:**

* Safety Health and Welfare at Work Act 2005 – S.I. No. 10 of 2005
* HSA Website - <http://www.hsa.ie/eng/FAQs/Lone_Workers/>
* Working Alone in Safety – Controlling the Risks of Solitary Work HSE – 1998

# Appendix 9: Radiation safety procedures

**Safety Procedures for Radioactive Materials held by Letterkenny Institute of Technology under Radiological Protection Institute of Ireland licence no.3228-2600-11 (amended August 2012)**

**Section 1 Technical description of licensed items**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Isotope, strength and  type | Number  of | Half life(yrs) | Holder type | Serial  number | Manufacturer |
| Nickel 63, | 1 | 100.1 | Sealed in | 5456 | Part of instrument manufactured by Perkin Elmer model Clarus 400, sited in R3703, licence covers custody **and** use. |
| 15 mC, |  |  | ECD |  |
| beta |  |  | detector |  |
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**Section 2 Normal operating procedures**

All experiments involving the Gas Liquid Chromatograph fitted with the Electron Capture Detector must be carried out under the supervision of a member of the academic staff.

**Section 3 Emergency operating procedures**

In the case of an emergency such as a fire, explosion or theft the normal Institute procedures will be followed, a member of the Institute’s Estates management will be informed regardless of the time of day and the RPO will also be contacted.

**Section 4 Planned maintenance**

The Electron Capture Detector is the only source which will require maintenance, it is standard practice to have such equipment services annually by the vendor-trained engineer who will certify the integrity of the detector. A wipe test will constitute part of the service.

Inspection of the instrument, leak tests and containment tests are carried out periodically by the Technical Officers in the area. Annual leak tests are performed.

**Section 5 Radiological safety procedures**

The GLC (located in R3703) is labelled as containing radioactive material a similar notice has been erected at the door of the Instrument room and unsupervised access to the instrument room is not permitted.

**Section 6 Administration**

The Institute has appointed Mr Ken MacIntyre to act as Radiological Protection Officer who reports to the Head of School of Science. In all matters relating to radioactive material the RPO will liaise closely with the Institutes Estate Manager and Safety Officer.

The Institute accepts any lecturer qualified to teach Chemistry or Analytical Science and all appropriately qualified members of the Technical staff as competent to operate the GLC equipment, following training by the vendor or Senior Technical Officer.

**Section 7 Records**

Records will be kept by the RPO of range of sources held their date of purchase serial numbers etc. A log is kept of each use of the Gas Liquid Chromatograph on the instrument control PC. Annual service records and wipe test results for the ECD are kept by the Senior Technical Officer.

Records of monthly and annual monitoring of the GLC are kept by the RPO. The Head of School of Science will keep the Site Licence.

A copy of the current licence is on display in the Safety Notice board at the main entrance to the Institute.

**Section 8 Transport**

In the event of the ECD source being transferred back to a supplier it shall be packaged according to the appropriate standard in force at the time and appropriately labelled. Preferably such a transfer will be undertaken by a competent member of the vendor’s staff.

# Appendix 10: Risk Assessment of Radioactive materials

**Risk Assessment for Radioactive Materials held by Letterkenny Institute of Technology under Radiological Protection Institute of Ireland licence no.3228-2600-11 (Date 23rd August 2012)**

**Hazard Identification**

1. *Nature of Hazard*

A hazard is any object, condition or practice which can cause an injury or loss. There is general recognition of many common hazards, e.g. an unguarded saw-blade, a wet stairway or an untidy floor. The Institute also recognises the hazard existing from the radioactive material held under Licence no.3228-2600-11 from the Radiological Protection Institute of Ireland. In 2012 the Institute availed of a scheme from the Department of Education and Science designed to reduce the quantity of radioactive material held in third level institutions. As of August 2012 the Institute is only licenced to possess 1 Nickel-63 detector.

1. *Identification of hazards*

The main process for identifying hazards is a periodic safety audit by a competent person or persons. However, hazards by their nature may arise at any time through a change in activities, a change in work practice, installation of new equipment, etc. Hazards once identified should be brought to the attention of a responsible person without delay. They should also be reported to Safety Officer. The primary objective will be the elimination of the hazard. Currently the radiological hazard cannot be eliminated; therefore appropriate Hazard Identification and Control Sheet have been prepared by the responsible person.

*Safety Audits*

A safety audit is a systematic and critical examination of the workplace for the purpose of identifying hazards, assessing the risk and recommending controls of the hazard where appropriate. The Institute has designated the Radiation Protection Officers as competent persons to carry out a safety audit each year and Hazard identification and Control Sheets are prepared or amended as necessary following this audit.

1. *Risk Assessment*
   1. *Risk*

When the safety audit identifies hazards, it is necessary to rank them so that they can be controlled in an orderly way. The risk associated with a hazard is a measure of the likelihood or probability of an accident coupled with the potential severity of the injury or loss. The safety audit has assessed the risk associated with each hazard in the Hazard Identification and Control Sheet by ranking them according to the categories described below:

**H (High)**

This rating is applicable where there is

* + 1. a possibility of fatality, serious injury or significant loss
    2. a possibility of injury to a number of people
    3. a serious violation of statutory regulation

**M (Medium)**

This rating is applicable where there is

1. a conceivable though unlikely possibility of fatality, serious injury.
2. a possibility of minor injury to a small number of people

**L (Low)**

This rating applies where injury is unlikely though conceivable.

1. *Hazard Control*
   1. *Hazard Identification and Control Sheets*

It is a function of a safety audit to recommend remedies for hazards observed. Where hazards cannot be removed, controls will be recommended to reduce the risk to an acceptable level.

1. *Persons at Risk*

Because of the nature of the materials held under licence no.3228-2600-090 the Institute regards all persons: staff, students, contractors and visitors to be at risk**.**

**Electron Capture Detector (Nickel-63)**

|  |  |  |  |
| --- | --- | --- | --- |
| **HAZARDS** | **RISKS** | **CONTROLS** | **RESPONSIBILITY** |
| External irradiation of the body, including possibly more- sensitive organs such as the eyes. Internal irradiation of the body arising from materials which have entered by inhalation, by absorption through the skin, by ingestion or through wounds | The risk in working with the Gas liquid Chromatograph is minimal.  Even if the sealed source is damaged the risk is low (see attached advisory note for similar detector appendix 1).  Provided the control measures given here are applied, the risk to health from a source of this type is **Low** | **Inspection**  Weekly. The whole instrument should be checked for signs of damage. A record should be kept of any malfunction, blemishes or damage to instrument or detector.  **Leak/wipe test of detector**  Annually at service or if damage is suspected. The outer surface should be wipe tested as per manufacturer’s procedure.  Contamination check of container are not required unless leakage is suspected  **Storage and labelling**  The source should be stored in its normal position in the instrument, labelled with a radioactive warning sign  **Spills**  As the detector is sealed spills cannot occur.  **Disposal**  A take-back agreement exists with Perkin Elmer, the supplier, but this detector **may not** be disposed of without the permission of RPII | Technical staff/ RPOs and Contracted Service staff.  Wipe test carried out July 2012 and sent for reading to RPII. Results below acceptable limits |
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**Advisory Note from Agilent Technologies for a similar ECD Detector**

SUBJECT**: Radiation Hazard of Agilent Technologies ECD Cell**

To Whom It May Concern:

Agilent Technologies, Inc. manufactures Electron Capture Detectors ECDs). The ECD contains a 15 mCi source of radioactive Nickel-63. This source is enclosed within a steel housing. The device is listed as **"UN 2911 Radioactive material, excepted package, instruments"** for shipping purposes. A person receives a level of less than 0.00001% of the values listed below when the source is within an unopened detector housing.

Based upon an independent report1, the level of radioactivity generated by the 63Ni source in an unshielded condition (for example if the housing were to be opened or melted) is summarized below in regard to the risks to a human body:

**SKIN DOSE:** If the source were held in a hand, the thickness of skin on the hand would block all Beta Particles.

**EYE DOSE:** The thickness of the covering membrane on the eye will block all Beta Particles.

**INHALATION DOSE:** If vaporized, and all vapors were to be inhaled, the person would receive a dose of 93.75 rem. If a source were to be ground into 1 micrometer diameter particles and all particles were to be inhaled, the total body dose would be approximately 37.5 rem.

**INGESTION DOSE:** If the source were to be eaten, the person would receive a dose of

8.3 rem.

**Persons working with an unshielded source at a distance of 16 cm from the source would require continuous exposure of 1,471 hours to obtain the annual public dose rate of 100 mrem**. This assumes worst case conditions of exposure angle, source uniformity, and source radiation.

3. Inspection of GLC in R2262\* (max value in μSv/Hr )

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Date | Background | Top | Front | Right | Left | Condition of  instrument housing | Signed |
| 5/9/11 | Yes | 0.14 | 0.38 | 0.62 | 0.40 | GOOD | JG |
| 8/10/11 | Yes | 0.12 | 0.52 | 0.63 | 0.42 | GOOD | JG |
| 4/11/11 | Yes | 0.13 | 0.41 | 0.58 | 0.36 | GOOD | JG |
| 02/12/11 | Yes | 0.13 | 0.44 | 0.59 | 0.41 | GOOD | JG |
| 6/1/12 | Yes | 0.12 | 0.42 | 0.50 | 0.32 | GOOD | JG |
| 3/2/12 | Yes | 0.13 | 0.44 | 0.72 | 0.28 | GOOD | JG |
| 2/3/12 | Yes | 0.13 | 0.41 | 0.51 | 0.36 | GOOD | JG |
| 2/4/12 | Yes | 0.13 | 0.35 | 0.34 | 0.36 | GOOD | JG |
| 4/5/2012 | Yes | 0.12 | 0.36 | 0.41 | 0.38 | GOOD | JG |
| 8/6/2012 | Yes | 0.12 | 0.38 | 0.34 | 0.32 | GOOD | JG |
| 6/7/2012 | Yes | 0.13 | 0.35 | 0.32 | 0.33 | GOOD | JG |
| Relocated  to R3703\* |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

# Appendix 11: Safety Procedures Lurgybrack Farm

**Occupational Health and Safety of LyIT Staff and Students**

**Working with Animals at Lurgybrack Farm**

**1. Personal Hygiene:**

* All LyIT staff and students while performing their duties shall wear overalls. Dedicated facility shoes, rubber boots, or disposable booties are required when working in cage washrooms, rooms housing animals administered hazardous agents, and areas housing cattle, sheep, horses, pigs, goats, emus, guinea pigs and uncaged cats.
* Shoes and boots visibly soiled with animal waste shall be cleaned and or disinfected prior to exiting the room in which the soiling has occurred.
* Veterinary nursing students shall change into clean uniforms and their dedicated shoes at the start of the practical in designated areas and change back into their street clothes and shoes before leaving the farm.
* Changes in attire for exiting the facility shall be determined by the LyIT lecturer in collaboration with the attending staff.
* Aprons shall be worn when the body is likely to get soaked with wash water or corrosive chemicals.
* All uniforms/lab coats/overalls shall be laundered.
* Personal Protective Equipment (PPE):
  + Disposable items (booties, gloves, lab coats, masks, respirators, and sleeves shall be discarded once removed into an appropriate waste container. DO NOT REUSE.
  + Reusable items (non-disposable respirators, safety glasses, chemical splash

goggles, boots, gauntlets, and leather/cloth gloves) shall be cleaned/disinfected after use and stored in an area that will keep them clean and protected from damage.

**2. Facilities, Procedures, & Monitoring**:

* LyIT lecturers shall continuously monitor facilities and equipment to identify and eliminate potential work place hazards and insure that safety equipment is properly used and maintained.

**3. Medical Evaluation and Preventative Medicine:**

* All LyIT staff with direct or indirect animal contact shall complete training in animal handling.
* All LyIT staff and students with direct animal contact shall be immunised against tetanus as a minimum. Immunisations against rabies, hepatitis B, etc. may be required on a case-by-case basis depending on the potential for exposure and risk assessment.
* Pregnant LyIT staff and students should report their condition to their line manager/ Head of Department as soon as possible so work assignments can be adjusted and additional PPE provided, if needed.

**4. In the event of an Accident**

* In the case of an accident stabilise the victim
* Get assistance from other staff (including farm staff)
* Seek medical help as required – see emergency numbers
* In the case of accidental injection bring the label of the drug bottle along if seeking medical attention
* In case of eye contamination, wash out eye immediately with clean water and bring contamination label along if seeking medical attention
* In the case of electrocution, switch over power supply if possible before helping victim. Otherwise use a dry plastic or wooden object to push the victim away from the source

**5. In the event of a Fire:**

* Raise the alarm, contact fire brigade if necessary
* Evacuate staff and students to the assembly point
* Check all staff and students are present
* Fight the fire - only if safe to do so
* If not, do not allow anyone to re-enter the buildings for any reason

**6. Emergency Contact Numbers:**

* Nurse: Hannah Glackin 074 9186850
* Hospital: Letterkenny General 074 9125888
* Fire brigade: Letterkenny 074 9153900
* Owner: Gerard O Loan 086 8212012
* County Council: Letterkenny 074 9153900
* EPA: Monaghan 047 77600
* Lecturer Aidan Finnan 086 2687128

**7. First Aid Box:**

* A first Aid bag will be kept by the LyIT staff member who is supervising the students.
* The first aid box will be maintained and checked on a monthly basis
* The first Aid box will be stored in the veterinary nursing laboratory when not being used on the farm

**REFERENCES:**

Citizens Information [www.citizensinformation.ie/en/employment/](http://www.citizensinformation.ie/en/employment/)

Department of Social Welfare website [www.welfare.ie](http://www.welfare.ie)

Health and safety Authority website [www.hsa.ie/](http://www.hsa.ie/)

Kellogg Rural Leadership Programme Reports, New Zealand <http://www.kellogg.org.nz/alumni/projects/>

Nuffield scholarship Reports [www.nuffieldinternational.org/live/Reports](http://www.nuffieldinternational.org/live/Reports)

Road Safety Authority website [www.rsa.ie](http://www.rsa.ie)

Teagasc [www.teagasc.ie](http://www.teagasc.ie)

Workplace Relations Commission <https://www.workplacerelations.ie>

# Appendix 12: Risk Assessment and Control Measures Room 2291

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| --- | --- |
| **Name**: | Letterkenny Institute of Technology |
| **Address:** | Port Road, Letterkenny, Co. Donegal F92 FC93, Ireland |
| **Area:** | LYIT-CDC, Port Road Room 2291 |
| **Signed:** | Danny Mc Fadden |
| **Date:** | 25th November 2019 |
| **Assessment review date:** | 25th November 2020 |
| **Document Revision** | 2.0 |

| **Hazards and risks** | **Category of risk** | **Description & Control measures** |
| --- | --- | --- |
| * Slips & * Trips | Low | **Description:** A number cables are required to interconnect the datacentre; various boxes are stored containing teaching and demo materials and the area can become heavily used at times.  **Control:**   * Main walkways need to be kept clear including area around entrance. * Where possible the back of the racks is to be accessible, however large amounts of cabling at the rear of racks are inevitable, and is not to be used as a routine walking area. * There is no access to the rear of the racks by students unless carrying out a specific task previously agreed by a member of staff, with dynamic risk assessment and student briefing. |
| Fire | Low | **Description:** A number of electrical devices run 24/7 to maintain and simulate a real datacentre.  **Control:**   * All running equipment fit for purpose, and housed in an appropriate industrially approved enclosure (plastic or metal). * All running equipment where possible will be maintained in vertical computer racks to allow for airflow and cooling. * No flammable materials are to be located close to direct sources of heat. * No combustible gas or naked flames are to be present in PR2291. * Where Staff deem possible, and if not in use for an extended period of time, devices should be de-energised, use sleep mode etc. This is to be carried out by CDC Administrators to avoid critical system shutdowns and vulnerability exposure. * In the event of fire follow the LYIT fire procedure https://intranet.lyit.ie/cms/media/Fire%20and%20Emergency%20Procedure%20Ver%20003.pdf |
| Chemicals | Low | **Description:** Uninterruptable power supplies (UPS) contains large batteries (chemicals)  **Control:**   * USP’s have little or no work carried out after installation. * UPS installation & maintenance are to be handled or supervised by staff member. * Students will not carry out unsupervised on UPS units. * USP units are typically require 2 persons due lifting loads, and ensure to adhere to manual handling rules. Current guidelines are available * <https://intranet.lyit.ie/cms/media/Manual%20Handling%20Procedure%20Ver%20002.pdf> |
| Moving Parts | Low | **Description:** PR2291 has a number of continuously moving parts – most typically fans  **Control:**   * A safe working distance is to be kept from all moving parts. * If work is to be carried out, Fans etc. must be de-energised and allowed to come naturally to a full stop prior to works being carried out. * Any moving parts shall be housed behind a mesh or grill to stop accidental encounters between persons or personal items and moving parts. |
| Working at height | Low | **Description:** Some items are located high up, and at the top of racks where the height may pose a difficulty to individuals.  **Control:**   * In the event of requiring access to work on a device at height, the LYIT H&S Guidelines must be followed. Please check for most recent. Current guidelines are avaialbe   <https://intranet.lyit.ie/cms/media/Manual%20Handling%20Procedure%20Ver%20002.pdf>   * Staff are encouraged to utilise colleagues to assist, and if possible circumvent the requirement to work at height. * Students are not to engage in working at height in PR2291. |
| Electrical hazards |  | **Description:** There are a number of 16A sockets and appliances and additionally 13A sockets in high density within PR2291.  **Control:**   * Due to the nature of the room, once connected, most electrical cables are not interacted with until equipment is removed years later. * Students will not interact with the 16A installation without Staff supervision. * Students and Staff are to exercise caution and best practice electrical safety when connecting and disconnecting electrical cables. |
| Fibre optic risks |  | **Description:** Fibre optic cabling carries laser light, and is comprised of small glass elements.  **Control:**   * Students & Staff are advised never to directly look into a fibre optic cable. * No “one side connected” fibre optic cables are to be left in pr2291 where accidental pickup and look down a cable can occur. * Any damaged or broken fibre optic cables are to be disposed of as they are considered a “sharp” risk. |
| Other associated cabling |  | **Description:** Additional CAT5, Coaxial and associated computer cables are clearly visible within the datacentre, and conceivably could lead to an entanglement situation.  **Control:**   * Students and Staff are not to carry out work or interact with cabling unless to carry out a specific task. * Students and Staff are to exercise caution when working around cables, and ensure they have a clear work area, safe escape route, and no cables are resulting in a trip hazard. * An awareness of cable types the potential risks posed by such cables is required prior to commencing any cabling works in PR2291. * Due to electrical constraints, cabling at the rear of racks may require cables between racks and wall outlets, this is unavoidable, refer to Slips & Trips above. |
| Overhead appliances | Low | **Description:** A number of appliances are mounted overhead e.g. Air conditioning.  **Control:**   * All overhead works are to be carried out by only trained staff. * Any appliances overhead must be fit for purpose and adequately secured to prevent break away. * No Students shall carry out work on overhead appliances. * Student are not permitted inside 2291 during overhead works. |
| Moveable racks | Low | **Description:** PR2291 has a number of small computer racks designed with portability using lockable coaster wheels.  **Control**   * While in the data center racks remain in static location. * While not being transported, lockable wheels should be engaged to prevent accidental movement. * No racks – portable or static should be sat on, leaned on, pulled or pushed at any stage, except for the express movement of portable racks, in which case the rack will be moved slowly and with due care to persons in the vicinity. |
| Heavy / Overweight items | Low | **Description:** PR2291 contains a number of large items over 25KG or labelled “2-person lift”  **Control:**   * No staff member shall attempt to solo lift an item clearly marked as overweight * Correct techniques in line with LYIT H&S guidelines regarding manual handling are to be followed without deviation. <https://intranet.lyit.ie/cms/media/Manual%20Handling%20Procedure%20Ver%20002.pdf> |
| Lone Working | Low | **Description:** At times staff may work in 2291 alone  **Control:**   * Staff working in 2291 are located on a main corridor with a number of technical staff adjacent as well as departmental staff * If sensitive work is not being carried out, staff are encouraged to work with door open * If staff feel a lone working situation exist, LYIT procedures on lone working must be followed   <https://intranet.lyit.ie/cms/media/Lone_Out%20of%20Hours%20Working%20Procedure%20ver%20003.pdf> |

**A copy of the LYIT-CDC Risk Assessment is to be kept – clearly visible within the LYIT-CDC.**

**If multiple copies are present, please check for the highest revision – clearly marked on the front page.**