

I Am Working With...

X-Ray/Lasers

Laboratory safety requires that all users of x-ray equipment understand the risks involved when using x-ray beams.

The following x-ray safety presentation and quiz have been provided to help you understand these risks.

- [X-ray training quiz](#)

This information and links in this section will be useful for Principal Investigators undertaking a new research, Technical staff involved in inspection, maintenance, procurement and disposal of chemicals and materials and also the students/staffs requiring training to carry out their research.

Chemicals

Nearly all labs in the department are HSNO (Hazardous Substances and New Organisms) exempt facility and hold chemicals of various classes as regulated by [HSNO Act 1996](#). The exempt Laboratory regulations require that an [accurate record of substances](#) will be kept of substances listed in Schedule 1 of the Hazardous Substances (Tracking) Regulations. The UN hazard identification system classifies chemicals in different classes according to its hazards. Refer the [Chemical Segregation chart](#) for separating and storing the classes of chemicals.

The University recommends to follow the [purchase protocol](#) to order drugs and highly hazardous chemicals. The Hazard class of any chemicals and its packaging group can be obtained from [ChemGold](#) database. All chemicals must be purchased through the University purchasing system, [Sciquest ERM](#).

The labs are administrated in the HSNO exempt facilities by the [lab managers and Person-in-charge](#). The use of chemicals must comply with University Health and safety [policy for small scale use of chemicals](#).

Biological Agents

The [Biological Safety Committee](#) (BSC), which assesses Hazardous Substances and New Organisms (HSNO) applications and provides advice on matters of biological safety at the University.

It is the responsibility of individual researchers or teams to ensure they have obtained necessary ethics or [HSNO](#) approval prior to undertaking research. If ethics approval is required for the research project, this must be done before the project can be activated and funds released.

The [Research Office](#) research ethics [team provide support](#) and advice to staff (both University and UniServices) and students (Honours, Masters, PhD) related to ethics and biological safety applications (including workshops and reviewing applications), process applications in [InfoEd](#), organise committee meetings and support committee decision-making on ethics applications. Other support roles include the Hazards & Containment Manager, reporting to HR, who is the University Biological Safety Officer, and looks after hazardous materials, radioactive materials containment, and [HSNO Act](#) compliance.

Additional resources:

- [Human Ethics Learning Module](#)
- [Biological risk management and containment](#)

Controlled Substances

Controlled substances are drugs and certain other chemicals, both narcotic and non-narcotic. As per the [Misuse of Drugs Act 1975](#), certain chemical are classified as controlled substances. The [table of compounds](#) that qualify as Controlled Drug can be referred while requested for Controlled Substances by the researchers.

Only qualified persons can hold license to deal in Controlled Drugs and are subjected to [Ministry of Health responsible person guidelines](#). The authorized person must hold a current [license to deal in Controlled substances](#). The purchase, training, use and disposable of such controlled substances follow [university standard operating procedures](#).

Electrical Systems and Workshops

All electrical equipment is to have a pre-use check before operating as per the University operating practices for the safety [testing and inspection of portable electrical appliances](#). The [electrical safety checklists](#) are available for auditing compliance with established procedures as per the university H&S [guidelines for Electrical systems](#).

The University operates a variety of workshops for educational and research use. There are a multitude of [hazards related to machinery](#) that need to be controlled to ensure the safety of students and staff. Read the university [workshop safety guidelines](#) before starting to work in these facilities. The [workshop safety checklists](#) are available for auditing compliance with established procedures.

Radioactive Materials

Radioactive materials and irradiating equipment are important and invaluable tools in education and research within the University. The university documents should be referred to [policies](#), [guidelines](#) and [radiation safety plan](#) before undertaking activities involving radiation.

All users of Irradiating Equipment and Radionuclide Sources (both staff and students) must comply with the [Radiation Safety Act 2016](#) and associated Regulations and license conditions which includes [code of practice for radiation use](#).

Responsible Principal Investigators are accountable for the safe use, storage and disposal of unsealed radionuclide or irradiating equipment purchased or otherwise obtained.

Pressure Vessels

Pressure vessel is an unfired vessel, the purpose of which is to hold, process, and store and transport fluids. The fluids in the pressure vessel can be gases or liquids at pressure exceeding 50 kpa or steam as defined in Pressure equipment's [Code of Practise](#).

These equipments are periodically maintained and inspected to mitigate risk. The inspection intervals depends on vessel type, use and environmental conditions. Inspection intervals are specified in Table 4.1 (Pg 21-24) and general information on conducting inspection on pressure vessel can be found in Appendix G (page 99) of the AS/NZS 3788 Pressure vessel inspection standards.

This [video](#) shows the proper usage, heating, and safety procedures when working with pressure vessels in a laboratory.

I Need ...

...to assess Hazard and Risk in my lab....

The hazard and risk assessment should be conducted when the project is discussed and planned between the student, supervisor, and lab technicians who will work on the project. This also applies when existing experiments are modified. For current experiments, a mini HAZOP is required and should be adequately documented. In all cases, the review needs to reflect the complexity of your experiment.

To assist assessing Hazard and Risk and preparing HAZOP, the following documents may be useful, or you can get advice from Professors Rob Kirkpatrick or Brent Young.

- [HAZOPS: An overview](#)
- [HAZOPS: What is involved?](#)
- [HAZOPS: Examples](#)

...to report an injury/incident in my lab....

Any accidents (including ill-health), incidents (including near misses), non-conformities and damage to buildings or equipment as soon as possible to their academic leader, administration staff, or health and safety staff. This requires to complete and sign [accident/incident form](#).

Serious Harm Incidents and Notifiable Events

Once medical first aid has been rendered and the site made safe, any accident site that has resulted in serious harm or had the immediate possibility of causing serious harm, must be isolated and preserved for evidence gathering. The Faculty of Engineering Health & Safety Manager must be immediately informed of the accident and will head an investigation. If the scene cannot be preserved, take as many photos as you can to aid the investigation.

This section is useful for student/staff who are newly inducted to a lab facility or a research activity inside a laboratory.

...to understand and access SciQuest....

ERM (previously known as SciQuest ERM) is inventory management and procurement tool for all chemicals, risk biologicals and most lab consumables.

[SciQuest ERM](#) is mainly used by staff or post-graduate students who work in laboratories that use chemicals or restricted biologicals.

- [Getting started with ERM](#)
- [ERM 9.3 quick guides](#)
- [ERM 9.3 video tutorials](#)

...work in labs after hours....

Staff and students who wish to work in the labs between the hours from 5 pm to 8 am are required to get the written permission of their supervisor, the manager of the lab they wish to work in and the HOD before starting work.

A [Risk assessment](#) must be done by the Lab user and supervisor to determine the level of hazard the person will be exposed to.

When the risk assessment has been completed and reviewed and approved by the Students Supervisor and Lab Manager it should be presented to the HOD for final approval. Only after obtaining written consent from the HOD may a student work after hours. The student must only perform the experimentation approved and signed off in the [HAZOP](#).

...to store and dispose waste....

When deciding where a chemical is to be stored the Student should discuss with the PI as to which lab they want the chemical stored. The PI should consult with the lab manager the correct place for the chemical to be stored in the lab.

- [SMOU 6. Storage of Chemicals in the Laboratory](#)

The chemicals that are used in your experiment must be disposed of in a safe manner. Your [HAZOP form](#) should cover this and be signed off before you start work.

- [Guidelines for waste-disposal](#)

...to get access to labs....

To get access to a Lab, you must determine which lab you need to use. Obtain a [Lab Access form](#). On the form you will need to record what you will be doing in the lab and what training you require, then talk to your supervisor. If he/she agrees that you need to use the lab, they will sign the lab access form.

You and your supervisor will then need to talk to the lab manager and discuss your requirements with them. If they also agree that you need to use the lab manager will sign the form.

The final person to inform is the [PIC \(person in charge\)](#) who will sign the form. You are then required to photocopy the lab access form and give the original to the PIC, who will file your permission in the lab folder.

The Access form gives you the ability to access the lab under supervision. You must have an approved [HAZOP](#) signed by your supervisor before you may work unsupervised.

Additional information

[SMOU1 General Exempt lab requirements](#)

...information on PPE and equipment safety....

People working in the lab are required to wear the following PPE (personal protective equipment) or additional PPE (gloves, face shields etc..) as per the Risk Assessment for the activity being conducted or the safe Work Instruction for the equipment being used.

Safety glasses: Glasses must be safety glasses as ordinary reading glasses are not shatterproof. Also, they do not have side protection which safety glasses are required to have.

Lab Coat: Lab coats are chemical resistant and slightly fire inhibited. This gives you a chance when you have an accident to remove the coat and reduce the amount of damage that may be caused if you weren't wearing one.

Closed in shoes: Open sandals and jandals are not permitted in the lab. Jandals are too easy to slip out. Fully closed in shoes give the best protection as they protect the skin from impacts and being exposed to chemicals.

Addition Information:

- [SMOU 3. Lab Work Practices](#)
- [SMOU 5. Personal Protective Equipment](#)