



Version	Approved by	Approval date	Effective date	Next review date
1.0	Deputy Vice-Chancellor (Research)	9 August 2016	15 August 2016	9 August 2019
<b>Procedure Statement</b>				
<b>Purpose</b>	This document sets out the responsibilities and authorities governing the use of ionising and non-ionising radiation in research in accordance with the requirements of the <i>Radiation Control Act 1990 (NSW)</i> (henceforth referred to as the <i>Act</i> ) and the <i>Radiation Control Regulations 2013</i> (the <i>Regulations</i> ) and other relevant codes and legislations.			
<b>Scope</b>	The content of the document applies to all staff, students and visitors at UNSW and affiliated centres and institutes involved in research using ionising and non-ionising radiation.			
<b>Are Local Documents on this subject permitted?</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes, subject to any areas specifically restricted within this Document	<input checked="" type="checkbox"/> No	
<b>Procedure Processes and Actions</b>				

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**1. Preamble**

As a major research and teaching establishment in Australia, the University uses a range of ionising and non-ionising radiation in Schools throughout its campuses. At UNSW, the risks involving the use of ionising and non-ionising radiation are evaluated by the University’s Radiation Safety Committee (RSC) according to federal and State legislative requirements and ensuring that the reduction of possible harm to the health and safety of people and the environment through radiation is at the core of research activities.

## 2. Regulatory Environment

UNSW holds a Radiation Management Licence (RML) with the Regulator in accordance with the requirements of the Act. The Licence allows the University to possess, store, sell or give away regulated materials. The Vice-Chancellor, as Head of the Establishment, has delegated the Deputy Vice-Chancellor (Research), with the support of the Presiding Member for Radiation Safety, the RSC and its Radiation Safety Officer and Research Ethics and Compliance Support (RECS) to oversee the use of regulated materials in research at UNSW.

All regulated materials are inspected by the RSC and recommended to the DVC(R) for registration under the University's RML. Any proposed changes to registrations such as decommissioning or transfer of regulated materials to another RML holder are reviewed by the RSC and approved by the DVC(R) so that notification can be made to the Regulator.

UNSW also holds a permit from the Australian Safeguards and Non-proliferation Office (ASNO) to possess nuclear material for research and storage purposes in compliance with Australia's obligations under its nuclear safeguards agreements with the International Atomic Energy Agency (IAEA). The University reports to ASNO annually on the inventory of nuclear material.

Although the Act includes "non-ionising radiation apparatus of a kind prescribed by the regulations" into the definition of regulated materials, the NSW Environment Protection Authority exclude these apparatus from their regulatory framework. For UNSW purposes, the Australian Radiation Protection and Nuclear Safety Regulations 1999 and its associated Radiation Protection Series will be referenced for best practice.

All lasers which fit the description of a controlled apparatus by the Australian Radiation Protection and Nuclear Safety Regulations 1999 are reviewed and approved by the RSC prior to commissioning. All laboratories where these lasers are located are registered with the RSC as laser laboratories.

## 3. Principles of Radiation Safety at UNSW

The University recognises the risks posed by the use of radiation in research and their potential harmful consequences to people and the environment as a result of exposure to ionising and harmful non-ionising radiation. The framework for radiation safety at UNSW is based on the radiation protection principles as outlined in the Act and Regulations to maintain all radiation exposures as low as reasonably achievable (ALARA). The principles are: a) justification: any activity involving potential exposure to radiation should be undertaken only if the net benefit can be justified, b) optimisation: all radiation exposures should be kept as low as reasonably achievable taking into account economic and social factors, and c) limitation: in no case should the dose limits as set out by the Regulations be exceeded.

## 4. Radiation Safety Committee

The composition, terms of reference, functions and responsibilities and method of operation of the RSC have been established to conform to the requirements of the *Radiation Control Act 1990 (NSW)*, the *NSW Radiation Control Regulations 2013*, *AS/NZS 2243 – Safety in laboratories Part 4: Ionizing radiation and Part 5 Non-ionizing radiations* and *AS/NZS 60825.14:2011 Safety of laser products Part 14: A user's guide*.

### 4.1. Scope

The RSC shall act in relation to:

- UNSW Australia and its affiliated organisations including those for which Affiliation Agreements are in force with respect to matters of radiation safety and the role of the RSC; and
- All research, teaching or other activity that involves the use of radiation as defined under the relevant Act, Regulations and Standards.

In addition to the responsibilities accorded under the Act, the Regulations, Guidelines and the Affiliation Agreements, the RSC shall provide advice to the Vice Chancellor of UNSW (or delegated officer) in relation to any radiation hazard generated in the course of, or relevant to, teaching, research or other activity within UNSW or its affiliated organisations.

### 4.2. RSC Terms of Reference

Under its terms of reference, the RSC is charged with the following responsibilities:

- Review the University's radiation safety procedures and its guidelines so that radiation doses to staff, students and members of the public are as low as reasonably achievable.

- Assess and recommend for approval to the DVC(R) research projects, laboratories or teaching courses involving the use of ionising radiation, radioactive substances or lasers and ensure that each proposal:
  - is subjected to a safety assessment based on the radiation protection principles of justification, optimisation and limitation;
  - is conducted in facilities with appropriate level of shielding, engineering and administrative controls to protect the health and safety of all persons involved;
  - fulfils all regulatory requirements and is subjected to any necessary pre-operational tests before its commencement; and
  - incorporates appropriate training for staff, students and visitors prior to work on the proposal.
- Review and recommend appropriate safety training for all staff and students who use ionising radiation, radioactive substances and lasers.
- Inspect and recommend for approval by the DVC(R) new facilities, radiation devices and apparatus requiring registration with the New South Wales Environmental Protection Authority (NSW EPA) under the University's radiation management licence (RML).
- Receive and consider reports from the Radiation Safety Officer (RSO) on:
  - monitoring results on personal radiation doses;
  - area radiation surveys of waste store;
  - annual inspections of areas where ionising radiation, radioactive substances or lasers are used; and
  - any other relevant matters concerning the uses of ionising radiation or radioactive substances and related facilities.
- Provide advice to the University on the building, modification and decommissioning of radiation and laser laboratories, including installation and commissioning of radiation apparatus and sealed source devices.
- Receive reports of incidents and accidents involving ionising radiation, radioactive substances or laser use through the RSO, including spills and unintentional exposure to radioactive material, recommend actions for improvement or remediation, and recommend for the DVC(R) to report the incidents to regulatory authorities as required.
- Provide advice to the Vice Chancellor of UNSW (or delegated officer) in relation to any radiation hazard generated in the course of, or relevant to, teaching, research or other activity within UNSW or its affiliated organisations.
- Forward any complaints and allegations of non-compliance of research involving radiation which may involve deviations from the UNSW Code for the Responsible Conduct of Research to the DVC(R) and provide specialist advice on the safety of the radiation environment.
- Report the University's inventory of nuclear material to the Australian Safeguards and Non-proliferation Office (ASNO) at the end of each financial year.
- Report on a regular basis to the DVC(R) and annually to University Council on its activities and compliance with its terms of reference.

#### **4.3. RSC Membership and Appointment**

The RSC comprises a minimum of six people and has the collective expertise to competently assess and provide advice on the work undertaken by the University and its affiliated organisations. Roles and responsibilities may be combined in the same person where appropriate. Committee members are appointed by the DVC(R) for a period of three years, with the possibility for renewal for another three years. The DVC(R) can terminate membership at any time. The Committee may make recommendations to the DVC(R) regarding the continuation or recruitment of members.

All members are appropriately indemnified by the University to fulfil their role on the RSC.

#### **4.4. Composition of the UNSW RSC**

The RSC is composed of the following membership:

- The **Presiding Member** as senior member and Chair of the RSC.

- **At least four persons** who have the combined expertise in the research disciplines in ionizing radiation, radioactive substances and lasers and who represent each School or Faculty using these radiation sources.
- The **Radiation Safety Officer** as representative of UNSW Health & Safety.

#### 4.5. Conflicts of Interest

The following arrangements are in place to deal with conflicts or potential conflicts of interest:

- Members declare, at the earliest opportunity, any potential conflict of interest in any matter that is presented to the RSC for assessment.
- All declarations of conflict of interest are recorded in the minutes of the meeting at which the declaration is made.
- The member who has declared a conflict of interest is excluded from the deliberations and assessment of the matter by the RSC.

If a sufficient number of members with relevant qualifications and experience are not available, the final recommendation for a proposal is postponed until the views of additional members have been sought or until the next meeting of the RSC.

#### 4.6. Attendance at Meetings

Members are selected onto the RSC due to their relevant expertise and as such, must be present at meetings of the RSC where their expertise is required in respect of assessments of a particular proposal. If members cannot attend meetings where their expertise is required they are invited to comment on items in writing for consideration by the RSC at its meeting. The Presiding Member may deputise an RSC Member to act as Chair in his or her absence.

Members are deemed to have vacated office if they are absent without leave for three consecutive meetings. The RSC records absences and apologies are lodged by a member who is unable to attend a meeting. The RSC may consider granting leave of absence when a member has missed two consecutive meetings and seeks leave (in writing) to miss a third meeting giving reasons for each absence. Leave of absence may be granted for one or more meetings at the discretion of the Presiding Member of the RSC. The Presiding Member will report this to the DVCR.

The RSC may co-opt and invite non-members to meetings to provide expert advice outside the scope of knowledge of the Committee. Such invitees will not vote in any decisions of the RSC.

#### 4.7. Quorum and Decision-Making Process

The decisions by the RSC are made by consensus as recommendations to the DVC(R) at quorate meetings, where quorum consists of at least 50% of members present or having provided their comments in writing for consideration at the meeting. Out of session decisions are ratified at the next quorate meeting.

### 5. Radiation Safety Officer

As an *ex officio* member of the RSC, the UNSW Radiation Safety Officer (RSO) advises the RSC and the University's researchers on health and safety regulations as relevant to the use of radiation. The RSO provides specialist strategic advice to the RSC on how to minimise risks of radiation use in research to human health and the environment and is a point of contact in emergencies where there is danger to humans or the environment.

The RSO ensures that University health and safety processes are recognised, integrated and followed in RSC processes. The RSO works with the RSC to provide appropriate training as required by the Regulator and ensures that training needs are integrated with general radiation safety requirements.

### 6. Regulated Materials Registration and Inspection

Custodians are responsible to ensure all their regulated materials are registered with the Regulator under the University's Radiation Management Licence. The RSC is responsible for inspecting and recommending regulated materials for registration. Laser laboratories and lasers only require registration with the RSC.

Upon successful registration, the RSC conducts annual inspections and communicates the outcome of the inspection to the custodian of the regulated materials. The custodian addresses any issues identified by the RSC as non-compliant within a specified time frame. The DVC(R) may suspend research at any time should the management of regulated materials be found non-compliant.

## 7. Research Conducted Outside of UNSW

UNSW researchers conducting research outside of UNSW (either within New South Wales, interstate or overseas) using other institutions' regulated material do not need to seek review by the RSC. Instead, they need to ensure that appropriate registration and licencing in accordance to the State authority where the research is based are met prior to commencement of the research.

UNSW researchers intending to take UNSW-registered regulated materials outside of UNSW-registered facilities (including onsite, within NSW, interstate or overseas) must inform the RSC prior to the activity. The RSC reviews that procedures are in place for the safe use of the material and that appropriate registration and licencing in accordance to the State authority where the research is based are met prior to commencement of the research.

The University reserves the right to place conditions on involvement or refuse involvement in external projects by its researchers should approved proposals not conform to the requirements of the *Act and Regulations*, other relevant legislations or potentially expose the University to undue risk.

## 8. Monitoring of Radiation Exposure and Adverse Events

Project supervisors or custodians of regulated materials and lasers are responsible to provide appropriate personal protective equipment to all persons working with and potentially exposed to penetrating radiation. They also need to implement processes to monitor personal exposure, area contamination and radiation emission as identified by the RSC assessment of proposal. Project supervisors or custodians of regulated materials are required to report unexpected adverse events to the RSO and RSC Support Officer as soon as possible in accordance to the emergency instructions on the UNSW Radiation Safety [website](#). The University may suspend or withdraw approval for research involving the use of radiation where it is reasonable to believe that continuation of the research project may compromise compliance with legislation.

Issues identified during RSC annual inspection which may possibly involve breaches of the UNSW Research Code of Conduct are immediately referred to the DVC(R) and dealt with according to the UNSW Procedure for Handling Allegations of Research Misconduct.

## 9. Complaints and Grievances

UNSW has established a complaints and grievances mechanism for UNSW personnel, students and persons external to the university. This process allows the voicing of concerns regarding the use of radiation in research and the ethical review process.

Complaints about the conduct of research by UNSW staff, students and visitors should be directed to the Senior Deputy Vice-Chancellor and Senior Vice-President. Allegations involving possible breaches of the *Australian Code for the Responsible Conduct of Research* are dealt with in accordance with the *UNSW Research Code of Conduct*.

Grievances about ethics review and processes by UNSW staff and students should be addressed to the Director of Research Ethics & Compliance Support (RECS).

## 10. Additional Operating Guidelines

Radiation operating guidelines in support of this Procedure, such as rulings on project proposals, waste disposal, area/personal monitoring, training framework for the safe use of radioactive materials, ionising radiation apparatus and lasers are approved by the DVC(R) and displayed in their most current form on the radiation safety [website](#).

## 11. Review & History

Version 1.0 of this Procedure was developed to facilitate compliance with the *Radiation Control Regulation 2013* (NSW). The Procedure is scheduled for review every three years.

Accountabilities	
Responsible Officer	Director, Research Ethics & Compliance Support
Contact Officer	Support Officer Radiation Safety E: <a href="mailto:radiationsafety@unsw.edu.au">radiationsafety@unsw.edu.au</a> T: +61 2 9385 7244

Supporting Information	
Parent Document (Policy)	UNSW Research Code of Conduct
Supporting Documents	HS005 Radiation Accident Report
Related Documents	AS/NZS 2243.4 Safety in Laboratories Part 4: Ionising Radiation AS/NZS 2243.4 Safety in Laboratories Part 5: Non-ionising Radiation AS/NZS 60825.14 Safety of Laser Products Part 14: A User's Guide AS/NZS 2982.1 Laboratory Design and Construction Part 1: General Requirements Australian Code for the Responsible Conduct of Research 2007 UNSW Research Code of Conduct Procedure for Handling Allegations of Research Misconduct
Superseded Documents	HS601 Ionising Radiation Procedure HS711 Non-ionising Radiation Procedure
UNSW Statute and / or Regulation	Nil
Relevant State / Federal Legislation	<i>Radiation Control Act 1990 (NSW)</i> <i>Radiation Control Regulation 2013 (NSW)</i> <i>Non-Proliferation Legislation Amendment Act 2003 (Cth)</i> Australian Radiation Protection and Nuclear Safety Regulations 1999
File Number	2016/24358
Definitions and Acronyms	
Ionising radiation	electromagnetic or particulate radiation capable of producing ions directly or indirectly in passage through matter, but does not include electromagnetic radiation of a wavelength greater than 100 nanometres.
Laser	is an acronym for light amplification by stimulated emission of radiation. Lasers produce coherent intense levels of radiation from IR, visible and UV light sources. Lasers which are subjected to registration with the RSC are only those fitted description of controlled apparatus in the <i>Australian Radiation Protection and Nuclear Safety Regulations 1999</i> : <ol style="list-style-type: none"> <li>1. a laser product with an accessible emission level more than the accessible emission limit of a Class 3R laser product, as set out in Australian/New Zealand Standard AS/NZS IEC 60825.1:2011 <i>Safety of laser products, Part 1: Equipment classification and requirements</i>; or</li> <li>2. an optical fibre communication system exceeding Hazard Level 3R, as defined by Australian/New Zealand Standard AS/NZS IEC 60825.2:2011 <i>Safety of laser products, Part 2: Safety of optical fibre communication systems (OFCS)</i>; and <ul style="list-style-type: none"> <li>• it produces non-ionizing radiation that could lead to a person being exposed to radiation levels in excess of the exposure limits mentioned in the table in clause 1 of Schedule 1; and</li> <li>• the excess levels of radiation mentioned in paragraph (b) are readily accessible to persons in the course of intended operations or procedures of the apparatus; or under a reasonably foreseeable abnormal event involving the apparatus; or under a reasonably foreseeable single element failure of the apparatus; or without the use of tools or other specialised equipment required to remove protective barriers or access panels.</li> </ul> </li> </ol>
Non-ionising radiation	electromagnetic radiation of a wavelength greater than 100 nanometres; or non-varying electric or magnetic fields; or sonic, infrasonic or ultrasonic waves that are prescribed as non-ionising radiation for the purposes of this definition.
Radiation Management Licence	an organisation responsible for regulated materials must hold a radiation management licence in respect of the regulated materials and must comply with any conditions to which the licence is subject.

<b>Radioactive substances</b>	any substance which emits ionising radiation spontaneously with a specific activity greater than 100 becquerels per gram and which contains more than the prescribed activity (40kBq, 400 kBq, 4MBq or 40MBq for radionuclides in Group 1, 2, 3 or 4 respectively).			
<b>Radiation apparatus</b>	a manufactured or assembled article, or any component, part or accessory of such an article, which when in operation contains or acts as part of an electrical circuit, or which acts by electromagnetic amplification employing a resonant space, and emits (or in the absence of effective shielding or other control would emit) ionising or non-ionising radiation.			
<b>Regulator</b>	NSW Environment Protection Authority (EPA).			
<b>Regulated materials</b>	radioactive substances, ionising radiation apparatus, sealed source devices and non-ionising radiation apparatus of a kind prescribed by the regulations.			
<b>Sealed source device</b>	equipment or a gauge, instrument or device that contains a sealed radioactive source and permits the controlled emission of radiation, but does not include a container used solely for the storage or transport of a sealed radioactive source.			
<b>Revision History</b>				
<b>Version</b>	<b>Approved by</b>	<b>Approval date</b>	<b>Effective date</b>	<b>Sections modified</b>
1.0	Deputy Vice-Chancellor (Research)	9 August 2016	15 August 2016	New Document

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