



Version	Approved by	Approval date	Effective date	Next full review
2.0	Deputy Vice-Chancellor Research & Enterprise	24 February 2021	24 February 2021	February 2024
<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 <a href="#">Radiation Control Act 1990 (NSW)</a> (henceforth referred to as <i>the Act</i> ) and the <a href="#">Radiation Control Regulations 2013 (NSW)</a> (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, however Local Documents must be consistent with this University-wide 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 & Enterprise and Pro 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 DVCRE or PVC(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 DVCRE or PVC(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 2018 \(Cth\)](#) 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 2018 \(Cth\)](#) 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 Research 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 [Radiation Control Regulations 2013 \(NSW\)](#), 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 DVCRE or PVC(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 DVCRE or PVC(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) and Laser Safety Officer (LSO) 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, radioactive substances, lasers 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, sealed source devices and lasers.
- Receive reports of incidents and accidents involving ionising radiation, radioactive substances or laser use through the RSO and LSO, including spills and unintentional exposure to radioactive material, recommend actions for improvement or remediation, and recommend for the DVCRE or PVC(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 Research Code of Conduct](#) to the DVCRE or PVC(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 DVCRE or PVC(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 DVCRE or PVC(R) for a period of three years, with the possibility for renewal for another three years. The DVCRE or PVC(R) can terminate membership at any time. The DVCRE or PVC(R) nominates a Deputy Presiding Member from the RSC membership. The Deputy Presiding Member will act in Presiding Member's absence or where the Presiding Member has a conflict of interest. The Committee may make recommendations to the DVCRE or PVC(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.
- **The Laser Safety Officer** as advisor on Laser radiation safety practice and compliance with regulatory requirements.

#### 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 to the Presiding Member or Deputy, 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 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 DVCRE or PVC(R).

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 DVCRE or PVC(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. Laser Safety Officer

As an *ex officio* member of the RSC, the UNSW Laser Safety Officer (LSO) advises the RSC and the University's researchers on health and safety regulations as relevant to the use of lasers. The LSO provides specialist strategic advice to the RSC on how to minimise risks of laser 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 LSO ensures that University health and safety processes are recognised, integrated, and followed in RSC processes. The LSO works with the RSC to provide appropriate training as required by relevant Australian Standards and ensures that training needs are integrated with general laser safety requirements.

## 7. 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 DVCRE or PVC(R) may suspend research at any time should the management of regulated materials be found non-compliant.

## 8. 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 with 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.

## 9. 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 with 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 monitoring or adverse event reporting which may possibly involve breaches of the UNSW *Research Code of Conduct* are handled in accordance with the UNSW *Research Misconduct Procedure*.

## 10. Complaints and Grievances

UNSW has established a complaints and grievances mechanism for UNSW staff, students and persons external to the university. Complaints about the conduct of research involving radiation by UNSW staff, students and visitors should be directed to the Director of Research Ethics and Compliance Support (RECS) ([radiationsafety@unsw.edu.au](mailto:radiationsafety@unsw.edu.au)). Allegations involving possible breaches of the *Australian Code for the Responsible Conduct of Research* are referred to the Conduct & Integrity Office ([research.integrity@unsw.edu.au](mailto:research.integrity@unsw.edu.au)) to be reviewed in accordance with the UNSW *Research Code of Conduct*.

Grievances about compliance review and processes by UNSW staff and students should be addressed to the Director of RECS ([radiationsafety@unsw.edu.au](mailto:radiationsafety@unsw.edu.au)).

## 11. 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 DVCRE or PVC(R) and displayed in their most current form on the radiation safety [website](#).

<b>Accountabilities</b>	
<b>Responsible Officer</b>	Director, Research Ethics & Compliance Support
<b>Contact Officer</b>	Support Officer Radiation Safety ( <a href="mailto:radiationsafety@unsw.edu.au">radiationsafety@unsw.edu.au</a> )
<b>Supporting Information</b>	
<b>Legislative Compliance</b>	This Procedure supports the University's compliance with the following legislation: <a href="#">Radiation Control Act 1990 (NSW)</a> <a href="#">Radiation Control Regulations 2013</a> <a href="#">Non-Proliferation Legislation Amendment Act 2003 (Cth)</a> <a href="#">Australian Radiation Protection and Nuclear Safety Regulations 2018</a> (Cth)
<b>Parent Document (Policy)</b>	<a href="#">Research Code of Conduct</a>
<b>Supporting Documents</b>	<a href="#">HS005 Radiation Accident Report</a>
<b>Related Documents</b>	<a href="#">AS/NZS 2243.4 Safety in Laboratories Part 4: Ionising Radiation</a> <a href="#">AS/NZS 2243.4 Safety in Laboratories Part 5: Non-ionising Radiation</a> <a href="#">AS/NZS IEC 60825.1:2014 Safety of laser products, Part 1: Equipment classification and requirements</a> <a href="#">AS/NZS IEC 60825.14 Safety of Laser Products Part 14: A User's Guide</a> <a href="#">AS/NZS 2982.1 Laboratory Design and Construction Part 1: General Requirements</a> <a href="#">Australian Code for the Responsible Conduct of Research 2018</a> <a href="#">Research Misconduct Procedure</a>
<b>Superseded Documents</b>	Radiation Research Safety Procedure, v1.1
<b>File Number</b>	2016/24358
<b>Definitions and Acronyms</b>	
<b>Controlled Laser</b>	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. Controlled Lasers are the subset of lasers which are subjected to registration and approval with the RSC are only those fitted description of controlled apparatus in the <i>Australian Radiation Protection and Nuclear Safety Regulations 2018</i>
<b>Ionising Radiation</b>	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.

<b>Laser</b>	<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 60825.1:2014 <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 maximum permissible exposure limits mentioned in Australian/New Zealand Standard AS/NZS IEC 60825.1:2014 <i>Safety of laser products, Part 1: Equipment classification and requirements</i>; and</li> </ul> </li> <li>3. The excess levels of radiation mentioned in paragraph (b) are readily accessible to persons in the course of: <ol style="list-style-type: none"> <li>a. intended operations or procedures of the apparatus; or</li> <li>b. under a reasonably foreseeable abnormal event involving the apparatus; or</li> <li>c. under a reasonably foreseeable single element failure of the apparatus; or</li> <li>d. without the use of tools or other specialised equipment required to remove protective barriers or access panels.</li> </ol> </li> </ol>			
<b>Non-ionising Radiation</b>	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			
<b>Radiation Management Licence (LMS)</b>	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>Radiation Safety Committee (RSC)</b>	Provides 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.			
<b>Regulator</b>	NSW Environment Protection Authority (EPA). Work Safe NSW			
<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 Delivery</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>
Version 1.0 of this Procedure superseded HS601 Ionising Radiation Procedure and HS711 Non-ionising Radiation Procedure				
1.0	Deputy Vice-Chancellor Research	9 August 2016	15 August 2016	New document

1.1	Deputy Vice-Chancellor Research	31 July 2017	15 August 2017	Administrative update to senior positions
2.0	Deputy Vice-Chancellor, Research & Enterprise	24 February 2021	24 February 2021	Full review leading to minor amendments