

1 PURPOSE

To establish the University of Melbourne's methodology for managing radiation sources, radiation practices and associated risks that will:

- ensure the health and safety of staff, students and others;
- apply the radiation principles;
- control the effective dose limit for all ionising radiation practices and use of radiation sources to a total whole body exposure of no more than 1 mSv annually; and
- comply with regulatory requirements.

2 SCOPE

This procedure applies to all radiation practices and radiation sources as defined by *the Radiation Act 2005 (Vic)*.

This procedure applies to all staff and students at all the University of Melbourne's campuses and each of the University's controlled entities.

3 DEFINITIONS

ALARA (As low as reasonably achievable)

ALARA requires that an exposure for justified activities are kept as low as reasonably achievable (social and economic factors being considered).

International Commission on Radiological Protection, 2007

DH

Department of Health, Victoria. DH administers and regulates Victorian radiation legislation.

Dose limits

The maximum amount (dose) of ionising radiation that a person can be exposed to as defined by the *Radiation Regulations 2017 (Vic)*.

DRSO

Departmental Radiation Safety Officer

Exempted package

A package containing a radioactive material that does not require the Management Licence holder to be authorised to transport a radioactive material. The requirements for exempted packages are defined in the *Code of practice for the safe transport of radioactive material*.

Management licence

A licence issued by the DH that authorises an organisation to conduct a radiation practice specified in that licence.

Personal monitoring device

A monitor issued to a person for measuring a radiation dose received by that person over a specified period.

Practice specific conditions

Regulated conditions (stated on the Management licence) that must be implemented with regards to the permitted radiation source and the permitted purpose.

Principles of radiological protection

The principles of radiological protection are:

- justification;
- optimisation; and
- limitation.

Radiation apparatus

A radiation apparatus is an ionising radiation apparatus that produces ionising radiation when energised but does not include:

- (a) a sealed source apparatus; or
- (b) an apparatus that is:
 - (i) prescribed by the regulations not to be an ionising radiation apparatus; or
 - (ii) declared not to be an ionising radiation apparatus under section 4.

Radiation Act 2005 (Vic)

Radiation practice

Radiation practice means any of the following activities:

- a) possessing a radiation source;
- b) selling a radiation source;
- c) transporting radioactive material;
- d) repairing a radiation source;
- e) maintaining a radiation source;
- (ea) managing or controlling the use of a radiation source;
- f) testing a radiation source where that testing does not involve using a radiation source;
- g) mining radioactive material;
- h) processing radioactive material;
- i) disposing of a radiation source;
- j) decommissioning a radiation facility;
- k) procuring or arranging research involving the irradiation of persons;

l) any activity (not referred to in paragraphs (a) to (k)) conducted in relation to a radiation source that may result in exposing a person or the environment to radiation;

but does not include:

- m) an activity referred to in paragraphs (a) to (l) that is prescribed by the regulations not to be a radiation practice; or
- n) using a radiation source.

Note: A person who carries out an activity referred to in paragraphs (b) to (l) during the course of his or her employment is not to be taken to be conducting a radiation practice.

Radiation Act 2005 (Vic)

Radiation source

A radiation source includes:

- radioactive material;
- radiation apparatus; or
- sealed source apparatus.

Radiation Act 2005 (Vic)

Radioactive material

Radioactive material—prescribed activity concentration and activity level for the purposes of the definition in section 3(1) of the Act

For the purposes of paragraphs (a) and (b)(i) of the definition of radioactive material in section 3(1) of the Act —

- a) the prescribed activity concentration for a material that is a radionuclide specified in Column 1 of Schedule 1 is the activity concentration specified in Column 2 of that Schedule opposite that radionuclide; and
- b) the prescribed activity for a material that is a radionuclide specified in Column 1 of Schedule 1 is the activity specified in Column 3 of that Schedule opposite that radionuclide

Radiation Regulations 2017 (Vic)

Radiation Safety Advisor (RSA)

The authorised representative of The University of Melbourne for the purpose of the following:

- *Radiation Act 2005 (Vic)* and *Radiation Regulations 2017 (Vic)*; and
- corresponding with the DH in relation to the University of Melbourne Management licence.

Schedule

A category of radiation practice stipulated in the Management Licence.

Use licence

A licence issued by the DH that authorises an individual to undertake a specified activity.

4 REQUIREMENTS

4.1 Ionising radiation management plan

The Director, Health & Safety shall develop, maintain and publish the University of Melbourne [Health & Safety: Ionising radiation management plan](#) (Plan)

The Plan will include:

- radiation web page
- radiation safety contacts
- licensing
- risk assessment and control
- standard operating procedures
- shielding
- monitoring
- labelling, signage and storage
- purchasing
- training
- disposal and waste management
- incidents requiring notification to the DH
- emergency management
- laboratory certification

The Head of School/Division or delegate shall develop, maintain and publish the School/Division Ionising radiation management plan. The Plan will include the same content (where relevant) as the University Plan.

4.2 Dose limits

The Head of School/Division shall allocate resources to ensure that ionising radiation activities limit total whole body exposure to an effective dose of 1 mSv annually.

The manager/supervisor shall ensure that staff or students that declare pregnancy:

- undertake work practices that do not exceed a total whole body exposure to an effective dose of 1 mSv annually; and
- comply with the [Health & Safety: Reproductive health requirements](#).

Ionising radiation practices that exceed a total whole body exposure to an effective dose of 1 mSv annually shall be assessed by the University RSA. Advice and guidance shall be provided to reduce total whole body.

Total whole body exposure shall not exceed an effective dose of 50 mSv in a year and 100 mSv in 5 years.

Refer to Section 4 of the Ionising radiation management plan for additional information with regards to dose limits.

4.3 Radiation web page

The Director, Health & Safety shall develop and maintain a radiation web page. The radiation web page will:

- take into account University requirements and relevant legislation; and
- provide support and assistance to the Head of Department/School in meeting those requirements.

Refer to the web pages [Ionising Radiation](#)

Refer to Section 5 of the Ionising radiation management plan for additional information with regards to the radiation web page.

4.4 Radiation safety contacts

The Director, Health & Safety shall:

- appoint the University of Melbourne RSA; and
- provide resources that support the responsibilities of the RSA.

Refer to Section 6 of the Ionising radiation management plan for additional information with regards to the University RSA.

The Head of School/Division (or delegate) shall:

- appoint a Departmental Radiation Safety Officer (DRSO); and
- provide resources to support the responsibilities of the DRSO.

Assistance and advice from the RSA can be sought when appointing a DRSO.

Refer to Section 6 of the Ionising radiation management plan for additional information with regards to DRSOs.

4.5 Licensing

4.5.1 Commonwealth Reporting

Where required the Director, Health & Safety or delegate shall provide a written report to the Australian Safeguards and Non-Proliferation Office (ASNO). The frequency and content of the report is determined by ASNO.

4.5.2 Management Licence

The Director, Health & Safety or delegate shall maintain and renew the Management Licence in the manner and frequency prescribed by the DH. This will include:

- renewing the licence at regular scheduled intervals; and
- varying the licence when notified by the local area of changes to their arrangements.

The Manager/supervisor shall ensure the RSA is notified where the acquisition, disposal or change of radiation sources and/or practices may alter the conditions of the licence.

The Manager/supervisor shall ensure that the conditions of the licence (practice specific conditions) with regards to the local area are implemented and maintained.

Refer to Section 7.2.1 of the Ionising Radiation management plan for additional information with regards to the Management Licence.

4.5.3 Use licence

The Head of School/Division shall ensure, that where personnel are required to hold a Use Licence issued by the DH, that:

- the Use Licence is current; and
- the Use Licence includes the radiation practice undertaken.

The Head of School/Division shall allocate resources to record and maintain a record of Use Licence holders.

Refer to Section 7.2.2 of the Ionising radiation management plan for additional information with regards to Use Licences.

4.6 Risk assessments and controls

The manager/supervisor shall ensure that risk assessments and controls are developed and maintained for all ionising radiation activities. The risk assessments and controls shall consider:

- limiting total whole body exposure to 1 mSv annually;
- applying the three principles of radiological protection, including ALARA;
- meeting the requirements of the [Health & Safety: Risk management requirements](#); and
- meeting the requirements of the [Health & Safety: Regulated plant requirements](#) (for radiation apparatus).

The DRSO shall provide assistance and advice on developing risk assessments and controls when requested by the manager/supervisor.

The University RSA shall provide assistance and advice on developing risk assessments and controls when requested by the DRSO.

Refer to Section 8 of the Ionising radiation management plan for additional information with regards to risk assessment and control.

4.7 Standard operating procedures

The manager/supervisor shall ensure that standard operating procedures are developed and maintained for all ionising radiation activities. Standard operating procedures shall consider:

- applying controls that consider the routes of exposure – external or internal;
- including the requirements of the [Health & Safety: Risk management requirements](#); and
- including the requirements of the [Health & Safety: Regulated plant requirements](#) (for radiation apparatus).

The DRSO shall provide assistance and advice on standard operating procedures when requested by the manager/supervisor.

The University RSA shall provide assistance and advice on developing standard operating procedures when requested by the DRSO.

Refer to Section 9 of the Ionising radiation management plan for additional information with regards to standard operating procedures.

4.8 Shielding

The Project Manager shall ensure that shielding requirements are included during the design of areas allocated as a radiation practice. Consideration shall be given to the type or radiation practice and the use of radiation sources within the radiation practice. Radiation shielding shall include:

- doors, walls, floor and ceiling of the room in which a radiation source is used; and
- that no person receives a radiation dose greater than the University dose limits.

The Head of School/Division shall ensure:

- radiation shielding is maintained in the doors, walls, floor and ceiling of the room in which a radiation source is used; and
- radiation shielding is maintained which ensures that no person receives a radiation dose greater than the University dose limits.

The manager/supervisor shall ensure that shielding arrangements for radiation sources are identified during the risk assessment and included in the controls.

Refer to Section 10 of the Ionising radiation management plan for additional information with regards to shielding.

4.9 Monitoring

4.9.1 Personal monitoring

All staff and students, working with ionising radiation and are likely to have an ionising radiation exposure above the University dose limits shall be provided with a personal monitoring device (see exception at the end of section).

Managers/supervisors shall:

- identify staff and students who require a personal monitoring device; and
- provide staff and students with a personal monitoring device when required.

The DRISO shall maintain and review local area personal monitoring records.

The University RSA shall review personal monitoring records. Where radiation exposure exceeds the University dose limits the RSA will liaise with the DRISO and manager/supervisor to reduce the radiation exposure.

Refer to Section 11.1.1 of the Ionising radiation management plan for additional information with regards to personal monitoring.

Exception: Where local area monitoring has been introduced, that adequately captures individual/personal ionising radiation exposures, personal monitoring may not be required.

4.9.2 Area monitoring

The Director, Health & Safety shall maintain suitable ionising radiation monitors that measure biological risk (survey) and contamination.

Monitors controlled by the Health & Safety team shall be calibrated in accordance with the manufacturer's instructions and regulatory requirements.

Where area monitoring has been introduced, the manager/supervisor shall:

- maintain suitable ionising radiation monitors that measure biological risk (survey) and/or contamination; and
- where applicable, arrange for calibration of the monitor(s) in accordance with the manufacturer's instructions and regulatory requirements.

Calibration records shall be managed and retained in accordance with the OHS documents procedure.

Refer to Section 11.1.2 of the Ionising radiation management plan for additional information with regards to area monitoring.

4.10 Labelling, signage and storage

The Head of School/Division shall ensure that controls are adopted and maintained that eliminate or reduce so far as is reasonably practicable the risks associated with the labelling of radioactive materials. This will include the following:

- labelling in accordance with the [Health & Safety: Chemical requirements](#) (where applicable); and
- labelling that is accurate, clear and durable.

The Head of School/Division shall ensure appropriate signage is displayed and maintained:

- on radiation apparatus;
- in areas where radiation sources are used; and
- in accordance with the [Health & Safety: Signage requirements](#).

The Head of School/Division shall ensure that suitable storage arrangements for radioactive sources include restricted access to authorised staff and personnel during the:

- delivery;
- use and handling;
- transport; and
- disposal.

The Director, Health & Safety shall provide and maintain:

- storage arrangements for radiation sources that require long term storage; and
- security arrangements and plans as outlined in the *Code of practice: Security of radioactive sources*.

Refer to Section 12 of the Ionising radiation management plan for additional information with regards to labelling, signage and storage.

4.11 Purchasing

The Head of Department/School shall provide resources to ensure that the purchase of radiation sources:

- complies with the [Health & Safety: Purchasing requirements](#); and
- notifies the University RSA where purchasing may alter the conditions of the Management Licence.

When purchasing a radiation source, managers/supervisors shall:

- comply with the [Health & Safety: Purchasing requirements](#);

- advise the University RSA where the Management Licence number is required; and
- advise the University RSA and the DRSO where the purchase may alter the conditions of the Management Licence.

The University RSA when advised of the purchase of a radiation source shall contact the DH to update the conditions of the Management Licence (if applicable).

Refer to Section 13 of the Ionising radiation management plan for additional information with regards to purchasing.

4.12 Inventory

The DRSO shall maintain a local area ionising radiation inventory. The local area ionising radiation inventory shall include:

- radiation sources;
- permitted practices; and
- locations of the radiation sources.

The DRSO shall notify the University RSA where there are changes to the inventory.

Refer to Section 14 of the Ionising radiation management plan for additional information with regards to inventory requirements.

4.13 Training

The Director, Health & Safety shall determine, publish and deliver specialist training for ionising radiation in accordance with the [Health & Safety: Training requirements](#).

The Head of Department/School shall provide resources that record and maintain ionising radiation records in accordance with the [Health & Safety: Training requirements](#).

All staff and students who purchase, handle or dispose of radiation sources shall complete specialist training for ionising radiation.

The manager/supervisor shall:

- identify staff and students who require specialist training for ionising radiation; and
- arrange for staff and students to undertake specialist training for ionising radiation.

Refer to Section 15 of the Radiation management plan for additional information with regards to training requirements.

4.14 Disposal and waste management

Radiation sources can be disposed of where the:

- radioactive material activity falls below the limits defined in the *Radiation Regulations 2017 (Vic)*; or
- radiation apparatus is rendered incapable of emitting ionising radiation.

Where radioactive waste falls below the limits defined in the *Radiation Regulations 2017 (Vic)* the waste is deemed to no longer be radioactive.

The manager/supervisor shall:

- comply with the [Health & Safety: Waste requirements](#) when disposing of radioactive material that falls below the limits defined in the *Radiation Regulations 2017* (Vic);
- contact the DRSO where a radiation apparatus requires disposal; and
- contact the RSA where radiological material cannot fall below the limits defined in the *Radiation Regulations 2017* (Vic).

The Director, Health & Safety shall provide resources to manage radiological waste that does not fall below the limits defined in the *Radiation Regulations 2017* (Vic).

The University RSA when advised of the disposal of a radiation apparatus shall contact the DH to update the conditions of the Management Licence.

Refer to Section 16 of the Radiation management plan for additional information with regards to disposal and waste management.

4.15 Transport

Excepted packages that comply with the *Code of practice for the safe transport of radioactive material* are permitted to be transported by staff.

The manager/supervisor shall ensure that excepted packages are transported in accordance with *Code of practice for the safe transport of radioactive material* including the provision of:

- appropriate labelling;
- appropriate packaging;
- spill kits (where applicable);
- material safety data sheets (where applicable); and
- emergency contacts and instructions.

Excepted packages cannot be transported through Australia Post.

Radioactive sources that cannot be transported as excepted packages shall be transported by an organisation who is licensed to transport radioactive sources.

When requested, the University RSA shall provide advice on the transport requirements for radiation sources.

Refer to Section 17 of the Radiation management plan for additional information with regards to transport of radioactive sources.

4.16 Incidents requiring notification

The manager/supervisor, following a radiological incident shall:

- immediately notify the DRSO and the University RSA;
- immediately commence emergency procedures (if required); and
- record and investigate the incident in accordance with the [Health & Safety: Incident injury hazard reporting and investigation requirements](#).

The University RSA will assess the incident details and determine if the incident requires notification to the DH.

The Director, Health & Safety or delegate will notify the DH in the prescribed manner where the incident requires notification.

Refer to Section 18 of the Radiation management plan for additional information with regards to incidents that require notification to the DH.

4.17 Emergency management

The manager/supervisor shall develop and maintain emergency procedures that consider:

- the type and use of radiation source;
- the established local area emergency procedures;
- the University of Melbourne emergency requirements; and
- the requirements of the [Health and Safety: First aid requirements](#).

The manager/supervisor shall ensure staff and students are aware of and understand the emergency procedures.

Following an emergency, the manager/supervisor shall record and investigate the incident in accordance with the [Health & Safety: Incident injury hazard reporting and investigation requirements](#).

Refer to Section 19 of the Radiation management plan for additional information with regards to emergency management.

4.18 Laboratory certification

Laboratories using radiation sources shall complete University ionising radiation laboratory certification. The purpose of this certification is to ensure that the laboratory:

- complies with legal requirements;
- complies with University requirements; and
- adopts the radiation protection principles when undertaking ionising radiation activities.

Laboratory certification will be coordinated by the University RSA or delegate.

The Director, Health & Safety will publish and maintain guidance material with regards to certification for ionising radiation laboratories. The guidance material will consider the requirements of the University procedures and relevant legislation and establish the University's default standards for ionising management requirements in laboratories.

<https://safety.unimelb.edu.au/safety-topics/other-safety-topics/radiation>

Refer to Section 20 of the Radiation management plan for additional information with regards to laboratory certification.

5 REFERENCES

Occupational Health and Safety Act 2004 (Vic)

Occupational Health and Safety Regulations 2017 (Vic)

Radiation Act 2005 (Vic)

Radiation Regulations 2017 (Vic)

The 2007 Recommendations of the International Commission on Radiological Protection International Commission on Radiological Protection, 2007

Department of Health, Victoria, Mandatory radiation safety requirements for use licence holders (Use Licence Condition)

Department of Health, Victoria, Mandatory radiation safety requirements. Management licence holder's obligations

Department of Health, Victoria, Mandatory reporting of radiation incidents

AS 2243.4: Safety in laboratories. Ionizing radiations

International Commission on Radiological Protection (ICRP), ICRP publication 103

Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Code of practice for the safe transport of radioactive material, RPS 2

Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Code of practice for the Security of radioactive sources, RPS 11

[Health & Safety: Ionising radiation management plan](#)

[Health & Safety: Reproductive health requirements](#)

[Health & Safety: Risk management requirements](#)

[Health & Safety: Regulated plant requirements](#)

[Health & Safety: Chemical requirements](#)

[Health & Safety: Signage requirements](#)

[Health & Safety: Purchasing requirements](#)

[Health & Safety: Training requirements](#)

[Health & Safety: Waste requirements](#)

[Health & Safety: Incident injury hazard reporting and investigation requirements](#)

[Health and Safety: First aid requirements](#)

6 RESPONSIBILITIES

Head of School/Division

Director, Health & Safety

Project Manager

Manager/supervisor

Radiation Safety Advisor

Departmental Radiation Safety Officer

7 ASSOCIATED DOCUMENTATION

7.1 Forms

[Health & Safety: Radioactive Material Risk Assessment](#)

[Health & Safety: Plant Risk Assessment](#)

[Health & Safety: Ionising radiation laboratory certification checklist](#)

7.2 Guidance

[Ionising radiation management guidelines](#)