

1. PURPOSE

The University of Melbourne Radiation Management Plan (Plan):

- supports the [Health & Safety: Ionising radiation requirements](#);
- outlines the University systems and processes for establishing an effective dose limit for all ionising radiation practices and use of radiation sources to a total whole body exposure 1 mSv annually; and
- establishes the University systems and processes to comply with regulatory requirements.

2. SCOPE

The Plan applies to all staff, students and others that may be exposed to a radiation source and subsequent exposure as a result of the University's:

- radiation practices; and
- use of radiation sources.

3. DEFINITIONS

Definitions are outlined in the [Health & Safety: Ionising radiation requirements](#).

4. DOSE LIMITS

The University "dose limits" requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

University dose limits have been set at a total whole body exposure to an effective dose of 1 mSv annually.

The nature of some radiation activities, such as diagnostic nuclear medicine, will expose staff to greater than 1 mSv annually. In these cases, the total whole body exposure must not exceed an effective dose of 50 mSv in a year and 100 mSv in 5 years.

Additionally, all radiation dose limits for both occupational exposures and public exposure will be no greater than stated in the Radiation Regulations 2017 (Vic) Schedule 4 Table A and Table B (Table 1).

Table A – Ionising radiation dose limits for occupational exposure	
Circumstance	Dose limit
Receipt of ionising radiation doses in any 60 month period	Effective dose of 100 millisievert
Receipt of ionising radiation doses in any 12 month period	Effective dose of 50 millisievert
Receipt of ionising radiation to the lens of an eye of a person in any 60 month period	Equivalent dose of 100 millisievert
Receipt of ionising radiation to the lens of an eye of a person in any 12 month period	Equivalent dose of 50 millisievert
Receipt of ionising radiation to the skin of a person in any 12 month period	Equivalent dose of 500 millisievert averaged over 1 cm ² of any part of the skin regardless of the total area exposed
Receipt of ionising radiation to the hands and feet of a person in any 12 month period	Equivalent dose of 500 millisievert
Table B – Ionising radiation dose limits for public exposure	
Circumstance	Dose limit
Receipt of ionising radiation doses in any 12 month period	Effective dose of 1 millisievert
Receipt of ionising radiation to the lens of an eye of a person in any 12 month period	Equivalent dose of 15 millisievert
Receipt of ionising radiation to the skin of a person in any 12 month period	Equivalent dose of 50 millisievert averaged over 1 cm ² of any part of the skin regardless of the total area exposed

Table 1: Schedule 4 – Radiation dose limits

5. RADIATION WEB SITE

The University “radiation web site” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

The content of the University [Ionising Radiation](#) web page includes:

- requirements, processes and guidance materials
- committees and groups
- radiation safety certification program
- training
- radiation safety contacts

6. RADIATION SAFETY CONTACTS

The University “radiation safety contacts” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

The Director, Health & Safety appoints the radiation safety advisor (Table 2) taking into account their training, skills and experience with regards to radiation.

University of Melbourne Radiation Safety Advisor			
Ira Tedja	Radiation Safety Advisor (RSA)	9035 6358 0418 507 054	ira.tedja@unimelb.edu.au

Table 2: University of Melbourne Radiation Safety Advisor

For initial ionising radiation enquiries contact radiation-info@unimelb.edu.au or log a request in ServiceNow.

Each Head of School/Division shall appoint a departmental radiation safety officer (DRSO) determined by their training, skills and experience with regards to radiation.

The DRSO can provide assistance and advice to the local area. Refer to the [Business Partner Contacts](#) web page and navigate to the applicable Academic location.

7. LICENSING

The University “licensing” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

7.1 Commonwealth Reporting

University “Commonwealth reporting” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

7.2 State Licensing

University “State Licensing” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

7.2.1 Management Licence

University “Management Licence” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

The Management Licence is divided into schedules that categorise radiation practices. The conditions (practice specific conditions) for each radiation practice are determined in these schedules. The conditions include:

- publications issued by the Department of Health (DH);
- publications issued by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) – Radiation Protection Series (RPS); and
- publications originally issued by the National Health and Research Council (NHRC) and under review by ARPANSA – Radiation Health Series (RHS).

Note: Where an RPS stipulates that a mandated requirement can only be altered/modified (such as specified in the Radiation management plan) this Plan recognises that risk assessments, standard operating procedures and other documented protocols can be used for this purpose.

The schedules and practice specific conditions are outlined in [Health & Safety: Management licence schedules](#).

The RSA shall provide the relevant sections of the Management Licence to the local practices via the DRSO or another nominated person. The details provided will include:

- for radiation apparatus and sealed source apparatus: location, permitted practices, make and model number, serial number and conditions of use; and
- for radioactive material: location, permitted activities, type and activity of isotope, serial number and conditions of use.

- The conditions of the University Management Licence may alter from time to time based on:
- changes to radiation practices and use of radiation sources that require varying the licence;
- changes to legislation; or
- changes to instructions/conditions from the DH.

7.2.2 Use Licence

The University “Use Licence” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#). A

School/Division/Department use licence register must be maintained and include:

- the name of the Use Licence holder(s);
- the allowed radiation use; and
- the expiry date of the Use Licence.

Requirements for [Radiation Use Licenses](#), including exemptions to hold a Use Licence are published on the DH web site:

A radiation [Use Licence Public Register](#) is published on the DH website.

8. RISK ASSESSMENT AND CONTROL

The University “risk assessment and control” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

Hazard identification and risk analysis for ionising radiation activities must take into account the:

- ionising radiation properties of the radiation source including:
 - the type, energy and activity of the ionising radiation;
 - the dose rate of the ionising radiation; and
 - the route of exposure of the ionising radiation; and
- other hazards associated with the ionising radiation activity such as:
 - plant;
 - chemical;
 - manual handling; and
 - biological.

Risk assessment methodology for ionising radiation activities must include the requirements of the [Health & Safety: Ionising radiation requirements](#).

Forms, guidance and requirements for University risk assessment methodology are available at:

<https://safety.unimelb.edu.au/safety-topics/management-systems/implement>

Note: When purchasing new ionising radiation sources to a location, the supervisor should ensure that other activities/tasks in the associated area are not affected. Where applicable existing risk assessments should be reviewed.

9. STANDARD OPERATING PROCEDURE (SOP)

The University “standard operating procedure” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

SOPs (or protocols) for ionising radiation activities must take into account the:

- ionising radiation properties of the radiation source including:
 - the type, energy and activity of the ionising radiation;
 - the dose rate of the ionising radiation; and
 - the route of exposure of the ionising radiation; and
- other hazards associated with the ionising radiation activity such as:
 - plant;
 - chemical;
 - manual handling; and
 - biological.

The University [Standard operating procedure form](#) can be used to develop and record ionising radiation SOPs.

Note: When purchasing new ionising radiation sources to a location, the Manager/supervisor should ensure that other activities/tasks in the associated area are not affected. Where applicable existing SOPs (and protocols) should be reviewed.

10. SHIELDING

The University “shielding” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

Radiation shielding must be re-assessed when:

- the frequency of use of the radiation source changes; or
- the radiation source is upgraded; or
- the surrounding room occupancy is altered.

11. MONITORING

The University “monitoring” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

11.1. Personal Monitoring

The University “personal monitoring” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

Staff and students who require personal monitoring will be provided with a personal monitor (normally optically stimulated luminescence [OSL]). The frequency for analyzing the OSL monitor will be determined by the ionising radiation activity but will not exceed every three months.

Personal monitoring results are analysed by a NATA accredited laboratory and forwarded to the relevant DRSO and RSA for review and retention in accordance with the [Health & Safety: Management system documentation requirements](#).

11.2. Area Monitoring

The University “area monitoring” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

Types of area monitoring include:

- contamination monitoring:
- completed by staff or students prior to, during and following activities that use radioactive materials, in particular open sources
- area survey:
- completed by the DRSO or RSA for radiation activities that use x-ray emitting apparatus
- compliance testing:
- completed by an authorised tester registered by the DH for radiation activities that use x-ray emitting apparatus (as determined by the DH) on humans
- local area monitoring:
- fixed monitor in a specific location to indicate variations in the radiation fields. The monitor will alarm if the radiation dose rate exceeds a specified level.

Monitoring results for area surveys and compliance testing must be retained in accordance with the [Health & Safety: Management system documentation requirements](#).

12. LABELLING, SIGNAGE AND STORAGE

The University “labelling, signage and storage” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

Radioactive material must be clearly labelled with the following information:

- the radionuclide;
- the activity of the radioactive material;
- the date the activity was measured; and
- where applicable, the requirements of the [Health & Safety: Chemical requirements](#).

Rooms containing radioactive material must be clearly signed at access points to the room and clearly display:

- the ionising radiation hazard symbol;
- the words, Caution Radioactive Material;
- the letters and symbol in black on a yellow background; and
- the requirements of the [Health & Safety: Signage requirements](#).

Radiation apparatus must be clearly labelled with the following information:

- the ionising radiation hazard symbol; and
- rooms containing unsealed radioactive material in excess of prescribed limits must be clearly signed at access points to the room and clearly display:
- the ionising radiation hazard symbol and the written warning (x-ray unit in this area);
- the letters and symbol in black on yellow background; and
- the requirements of the [Health & Safety: Signage requirements](#).

Storage of radiation sources must;

- display the ionising radiation hazard symbol (the symbol in black on yellow background); and
- restrict access to authorised staff and students.

13. PURCHASING

The University “purchasing” requirements are outlined in the [Health & Safety: Purchasing requirements](#).

The University Management Licence number is held by the Director, Health & Safety.

A Manager/supervisor who requires the University Management License number to purchase radiation sources must contact the RSA. The RSA will contact the manufacturer/supplier with regards to the University Management Licence number.

14. INVENTORY

The University “inventory” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#). A radiation inventory records all radiation sources:

- radioactive material;
- radiation apparatus; or
- sealed source apparatus.
- The Management Licence details provided to local practices (as discussed in Section 7.2.1) can be used as a radiation inventory.

15. TRAINING

The University “training” requirements are outlined in the [Health & Safety: Training requirements](#).

The purpose of the ionising radiation training is to ensure that all staff and students working with radiation sources:

- understand the radiation principles and radiation controls that will reduce personal radiation exposure; and
- understand the requirements of University relevant procedures.
- booking on-line through Themis.

The Director, Health & Safety shall ensure that the University of Melbourne RSA receives Advanced Radiation Safety Officer Training through the Australia Nuclear Science and Technology Organisation (ANTSO) or the equivalent.

16. DISPOSAL AND WASTE MANAGEMENT

The University “disposal and waste management” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

Radioactive material activity that falls below the limits defined in the Radiation Regulations 2017 (Vic) can be disposed of through the University hazardous waste collection service.

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

Staff and students disposing of waste, as described above, through on the [Hazard Waste](#) web site must:

- comply with [Health & Safety: Waste requirements](#);
- submit details of the waste including;
 - quantity (in kilos or litres);
 - number of containers; and
 - type of waste;
- clearly label the waste; and
- remove all radiation labels.

17. TRANSPORT

The University “transport” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

Labelling

An excepted package must not be labelled with a radioactive transport label. An excepted package label must:

- include the words “radioactive material excepted package”; and
- include the United Nations dangerous goods number (UN) of the radioactive material.

Packaging

The packaging of the radioactive material must be:

- sturdy enough to be transported – the original packaging, where available, must be used;
- packed with absorbent material for open sources;
- sealed; and
- labelled with an excepted package label.

18. INCIDENTS REQUIRING NOTIFICATION

Radiological incidents that require notification to the DH are outlined on the DH web site:

[Mandatory reporting of radiation incidents](#)

The University incidents requiring notification to the DH requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

19. EMERGENCY MANAGEMENT

The University “emergency management” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

All ionising radiation emergency procedures must include the relevant emergency contact number(s) for the location where the emergency occurred.

20. LABORATORY CERTIFICATION

The University “laboratory certification” requirements are outlined in the [Health & Safety: Ionising radiation requirements](#).

With regards to ionising radiation, laboratory certification is normally scheduled biennially and comprises of five categories:

- management;
- laboratory practices;
- training;
- incident reporting and emergency procedures; and
- details of the radiation source(s) in use