

IONISING RADIATION DOSIMETRY PROCEDURES

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1. PURPOSE

The purpose of these procedures is to ensure the correct monitoring of radiation exposure to staff or students who are exposed to ionising radiation as part of their work or study at Monash University, in accordance with the requirements of the Radiation Act 2005, Radiation Regulations 2007 and the Occupational Health and Safety Act 2004.

2. SCOPE

The guidance, procedures and processes outlined in this document apply to staff, students, visitors and contractors at the Australian campuses of Monash University and to Monash controlled entities.

3. ABBREVIATIONS

DRA	Designated radiation area
mSv	millisieverts
OH&S	Occupational Health and Safety Branch
RSO	Radiation Safety Officer
RPO	Radiation Protection Officer
SDU	Staff Development Unit
TLD	Thermoluminescent dosimeter

4. DEFINITIONS

4.1 DESIGNATED RADIATION AREA

A designated radiation area is defined as any area that is under the supervision of an RSO. These areas include storage facilities, laboratories or other areas where sources of ionising radiation are present and exposures may be above background levels.

4.2 DOSIMETRY

Dosimetry is the measurement of radiation dose. At Monash University, the radiation dose that radiation workers receive from their occupational exposure is monitored by means of a thermoluminescent dosimeter (TLD) badge.

4.3 HEAD OF ACADEMIC/ADMINISTRATIVE UNIT

Head of academic/administrative unit is used to denote the head of the area that is undertaking the activity. For academic areas, this term includes head of faculty, department, school, institute or centre. For administrative areas, the term includes head of division, branch, centre or unit.

4.4 MONASH ACTION LEVELS

4.4.1 The Monash Action Levels apply to all radiation workers, including those who are pregnant¹.

4.4.2 The Monash Action Levels are defined as:

- An annual effective dose of 1mSv, observed on a pro rata basis throughout the monitoring period. This is equivalent to the public limit as defined in Schedule 2, Table B of the Radiation Regulations 2007.
- An annual extremity dose of 50mSv, observed on a pro rata basis throughout the monitoring period.

¹ Refer to the *Procedures for Protecting the unborn child from the effects of ionising radiation* for more details.

4.5 MONASH CONTROLLED ENTITY

Monash controlled entities (e.g. companies) include entities where Monash can control decision making, directly or indirectly, in relation to the financial and operating policies so as to enable the entity to operate with it in pursuing the objectives of Monash University.

For the remainder of this document, a Monash controlled entity will be referred to as a controlled entity.

4.6 RADIATION PROTECTION OFFICER

The Radiation Protection Officer is the OH&S staff member responsible for providing and coordinating radiation protection services at Monash University.

4.7 RADIATION SAFETY OFFICER

A radiation safety officer is a designated staff member in a unit responsible for approving and supervising the ionising radiation work and study of staff and students.

4.8 RADIATION WORKER

A radiation worker is a staff member or student who is exposed to ionising radiation as a result of working with ionising radiation source(s) as part of their work/study.

5. DOSIMETRY: SPECIFIC RESPONSIBILITIES

A comprehensive list of OHS responsibilities is provided in the document *OHS management at Monash University: Structure, functions, roles and responsibilities* (www.adm.monash.edu.au/ohse/documents). A summary of responsibilities with respect to these procedures is provided below.

5.1 HEAD OF ACADEMIC/ADMINISTRATIVE UNIT

The head of academic/administrative unit is responsible for:

- ensuring that an up to date and feasible TLD badge allocation system is maintained and administered in their unit;
- facilitating all radiation workers in successfully completing the ionising radiation training and exam before they use ionising radiation.

5.2 RADIATION SAFETY OFFICER

The radiation safety officer is responsible for administering personal monitoring programs for users of radioactive substances, including:

- ensuring that the new radiation user follows dosimetry procedure for the entire period of working with ionising radiation;
- examining dose results and initiating investigation where results are unexpectedly high;
- working with the RPO to investigate results which exceed the Monash Action Levels.

5.3 RADIATION PROTECTION OFFICER

The Radiation Protection Officer is responsible for:

- selecting a suitable TLD provider to facilitate the badge allocation system;
- maintaining a database of all dose results for all TLD badge wearers within the University.
- examining all dose results and initiating and coordinating investigation of results which exceed the Monash Action Levels.

5.4 RADIATION WORKER

Each radiation worker must follow the dosimetry procedure as outlined below for the entire period of working with ionising radiation.

6. DOSIMETRY: SPECIFIC PROCEDURES

6.1 RADIATION SAFETY OFFICER

6.1.1 The RSO must ensure that any new radiation user undergoes the multimedia ionising radiation training and successfully completes the exam before a TLD badge is issued.

6.1.2 The RSO must then arrange for a TLD badge to be assigned with changeover at regular 12 week intervals for the duration of the ionising radiation work.

6.1.3 The RSO must arrange for the monitoring of radiation users who have declared their pregnancy, with a TLD badge changeover at regular 4 weekly intervals¹.

6.1.4 The RSO must examine dose results, investigate any unexpected results or results over the Monash Action Level and communicate the results to the RPO and the radiation worker.

6.1.5 The RSO, in conjunction with the RPO, must determine what corrective actions are necessary to prevent further exposures above the Monash Action Levels.

6.1.6 The RSO must assist workers to implement the appropriate corrective actions.

6.2 RADIATION PROTECTION OFFICER

6.2.1 The RPO must ensure that a copy of all TLD results is received and kept at OH&S.

6.2.2 The RPO must maintain a record of all TLD results above the Monash Action Levels.

6.2.3 The RPO must, in conjunction with the local RSO, determine what corrective actions are necessary to prevent further exposures above the Monash Action Levels.

6.2.4 The RPO must maintain a record of the actions taken in investigating these results and any corrective actions taken.

6.3 RADIATION WORKER

6.3.1 The radiation worker must successfully complete the Monash radiation safety online examinations before they commence work or study with ionising radiation. Where the radiation work will not involve use of unsealed sources, the RPO may substitute a different training requirement on a case-by-case basis.

6.3.2 On successful completion of the examinations, the radiation worker must contact their RSO to receive a TLD badge before commencing any ionising radiation work.

6.3.3 The radiation worker must wear their TLD badge at all times when in a designated radiation area.

¹ Refer to the *Procedures for Protecting the unborn child from the effects of ionising radiation* for more details.

6.3.4 Changeover of TLD badges

Radiation workers must submit their TLD badge for changeover to their RSO:

- at the end of each 12 week wearing period;
- immediately, in circumstances of a suspected high exposure;
- on a 4 weekly basis in the case of declaring their pregnancy.

6.3.5 The radiation worker must:

- cooperate with any investigation into exposures over the Monash Action Level;
- assist the RSO to implement appropriate corrective actions to prevent further exposures above the Monash Action Levels.

7. RECORDS

Record to be kept by	Records	To be kept for:
Academic/administrative unit/controlled entity	Records of training provided by unit/entity, including: <ul style="list-style-type: none">• Attendees;• Short description of training content	Indefinitely
SDU	Records of training provided by OH&S, including: <ul style="list-style-type: none">• Attendees• Short description of training content	Indefinitely
	Course evaluation sheets	5 years
OH&S	Exam results for OH&S managed assessments	Indefinitely
	Personal TLD results	Indefinitely
OH&S health team (confidential files)	Bioassay and internal exposure results (where collected by OH&S)	Indefinitely

8. REFERENCES

8.1 LEGISLATION

Radiation Act (2005)
Radiation Regulations 2007

8.2 CODES OF PRACTICE AND RELATED DOCUMENTS

Recommendations for Limiting Exposure to Ionizing Radiation (Printed 1995 - Republished 2002) and National Standard for Limiting Occupational Exposure to Ionizing Radiation (Printed 1995 - Republished 2002)

8.3 MONASH UNIVERSITY OHS DOCUMENTS

(www.adm.monash.edu.au/ohse/documents)

Manual for Users of Ionising Radiation
Occupational health and safety management at Monash University: Structure, functions, roles and responsibilities
Protecting the unborn child from the effects of ionising radiation
Radiation Safety Manual
Training records
Using Ionising Radiation at Monash University

8.4 AUSTRALIAN STANDARDS

AS 2243.4:1998 Safety in Laboratories: Ionising radiation