



ANMF (Vic Branch) Policy

Exposure to radiation

1. Introduction

The Australian Nursing and Midwifery Federation (Victorian Branch) [ANMF (Vic Branch)] recognises that nurses, midwives and carers may be exposed to ionising and non-ionising radiation from diagnostic equipment and treatment, during the course of their work, creating a risk to their health and safety.

2. Objectives

The ANMF (Vic Branch) objective is to support the prevention and management of risks to the health and safety of Victorian nurses, midwives and carers arising from occupational exposure to radiation, during the course of their work.

3. Scope

This policy applies to all ANMF (Vic Branch) members, and all nurses, midwives and carers eligible for ANMF (Vic Branch) membership in Victorian healthcare environments and other industries.

4. Definitions

Radiation: is the emission of energy from both natural and man-made sources that ranges from very high-energy (high-frequency) radiation to very low-energy (low-frequency) radiation. It includes electromagnetic radiation and is encapsulated in what is often referred to as the electromagnetic spectrum.

Non-ionising radiation: “Means electromagnetic radiation of a wavelength of greater than 100 nanometres¹” and is on the long wavelength end of the electromagnetic spectrum, where there is enough energy to make molecules and atoms vibrate faster but not break chemical bonds. Non-ionising radiations in the health industry are predominately emitted from electrical equipment, mobile and cordless phones, screens and WiFi signals. These operate in the radiofrequency (RF) wave range of the electromagnetic spectrum¹.

Ionising radiation: “Means electromagnetic or particulate radiation capable of producing ions directly or indirectly but does not include electromagnetic radiation of a wavelength of greater than 100 nanometres²”. It has more energy than non-ionising radiation and can break chemical bonds, causing damage to biological tissue. Ionising radiations in the health industry are predominately emitted by diagnostic equipment and treatments. Ionising radiations are at the higher end of the electromagnetic spectrum with shorter wave lengths and higher frequencies.

¹ Radiation Act 2005 – Victoria

² Radiation Act 2005 – Victoria

5. Policy

- 5.1. Under the Victorian *Occupational Health and Safety Act 2004*, all employees have a right to perform their work in an environment that is safe and without risks to health from occupational exposure to radiation, so far as is reasonably practicable
- 5.2. Employers must comply with the requirements set in accordance with the *Radiation Act 2005*, the *Radiation Regulations 2017* (Vic) and the relevant Codes of Practice³, which include:
 - 5.2.1. Appropriate licensing and conditions
 - 5.2.2. Testing and monitoring of ionising radiation equipment
 - 5.2.3. Implementing and developing controls to minimise exposure to workers and the public
 - 5.2.4. Testing and monitoring exposure of workers
 - 5.2.5. Reporting of radiation accidents / incidents
- 5.3. Employers must comply with the relevant Codes⁴ and Regulations⁵, and most importantly must ensure the following:
 - 5.3.1. A responsible person to oversee the management of radiation at the health facility
 - 5.3.2. Duties of the responsible person are in accordance with Part 2.5 of the Code for Radiation Protection in Planned Exposure Situations 2020⁶
 - 5.3.3. A Radiation Management Plan which needs to be resourced, implemented and regularly reviewed
 - 5.3.4. The Radiation Management Plan is developed in accordance with Schedule A “Radiation Management Plan” of the Code for Radiation Protection in Medical Exposure 2019⁷ and also the safety requirements contained in Part 3 of Code for Radiation Protection in Planned Exposure Situations 2020⁸

6. Key elements

- 6.1. Employers
ANMF (Vic Branch) requires employers to prevent and minimise the risk of occupational exposure to occupational radiation through:
 - 6.1.1. Implementation of a management policy to prevent potential occupational exposure to radiation
 - 6.1.2. Implementation of risk management processes to identify, assess and control occupational exposure to radiation hazards and risks
 - 6.1.3. Implementation of an appropriate procurement policy for purchasing and sourcing products containing or creating / emitting radiation
 - 6.1.4. Integration of occupational radiation exposure prevention into workplace OHS arrangements – including OHS representation, consultation and issue resolution
 - 6.1.5. Communication to all staff to raise awareness about exposure to radiation and involvement of staff in the prevention and management strategies implemented
 - 6.1.6. Provision of training to all staff to educate them about occupational exposure to radiation, including preventative and management strategies and symptoms
 - 6.1.7. Action plans which outline management responsibilities, timelines and resource allocation for preventing occupational exposure to radiation at the workplace and organisation levels
 - 6.1.8. Provision of knowledge and skills in managing issues around occupational exposure to radiation for managers and supervisors

³ ARPANSA, Code for Radiation Protection in Medical Exposure (2019), and ARPANSA, Code for Radiation Protection in Planned Exposure Situations (2020).

⁴ Ibid.

⁵ *Radiation Regulations 2017* (Vic)

⁶ ARPANSA.

⁷ Ibid.

⁸ Ibid.

6.2. Radiation exposure limits

Occupational exposure to ionising radiation for nurses, midwives and carers (over 18 years of age) must not exceed the dose limits set in the Code for Radiation Protection in Planned Exposure Situations (2020)⁹, which is as follows:

- 6.2.1. Effective dose of 20 millisieverts (mSv) per year, averaged over 5 consecutive years, where the dose limit must not exceed 50 mSv in any single year
- 6.2.2. Annual equivalent dose to the lens of the eye of 20 mSv per year, averaged over five consecutive years, where the dose limit must not exceed 50 mSv in any single year
- 6.2.3. Annual equivalent dose to the skin of 500 mSv per year
- 6.2.4. Annual equivalent dose to the hands and feet of 500mSv per year

“When a pregnancy is declared by an occupationally exposed female, the working conditions of that person should be such as to ensure that the additional dose to the embryo/foetus would not exceed about 1 mSv during the remainder of the pregnancy”¹⁰.

There are no legal limits to the occupational exposure of non-ionising radiation to which workers may be exposed to in Victoria.

6.3. Consultation

The ANMF (Vic Branch) recognises that controlling exposure to radiation should involve consultation between employers and Health and Safety Representatives (HSRs). Consultation must occur when:

- 6.3.1. Identifying where radiation is a workplace hazard
- 6.3.2. Deciding how radiation is to be controlled
- 6.3.3. Making decisions on adequacy and use of PPE
- 6.3.4. Developing and reviewing the Radiation Management Plan
- 6.3.5. Assessing training needs for nurses, midwives and carers

6.4. Health and Safety Representatives (HSRs)

ANMF (Vic Branch) supports inclusion of HSRs in the prevention of risks to health from exposure to radiation through the following:

- 6.4.1. Representation and consultation with employers as per the *OHS Act 2004*
- 6.4.2. Health and Safety Committee (HSC) formulation, review and dissemination of plans for minimising exposure to radiation
- 6.4.3. Workplace OHS issue resolution
- 6.4.4. Provisional Improvement Notices (PINs) or requests for WorkSafe Inspectors to attend the workplaces if the employers have not acted to resolve issues with exposure to radiation, after consultation with HSRs, or cease works, as required

6.5. ANMF (Vic Branch) members

The ANMF (Vic Branch) supports involvement of members in the prevention of issues related to radiation exposure through:

- 6.5.1. Reporting issues to management and HSRs, including issues associated with implemented controls e.g. barriers, PPE etc
- 6.5.2. Consultation through HSRs on prevention of exposure to radiation control measures

⁹ ARPANSA, Code for Radiation Protection in Planned Exposure Situations (2020), page 19

¹⁰ Recommendations for Limiting Exposure to Ionizing Radiation and National Standard for Limiting Occupational Exposure to Ionizing Radiation (1995) – ARPANSA

6.6. Training

Employers must ensure that all nurses, midwives and carers who may be occupationally exposed to ionising radiation have training or instruction that relates to:

- 6.6.1. The type of work being undertaken
- 6.6.2. The radiation-production equipment or radiation source, and related ancillary equipment, that the individual may be required to use
- 6.6.3. Any potential radiation hazards associated with the practice
- 6.6.4. The means of protection and minimisation of radiation exposure
- 6.6.5. The appropriate use of PPE, and risk reduction strategies implemented to reduce any associated risks

6.7. Control of exposure to radiation

Employers shall ensure that there is a plan for control of exposure to radiation in the workplace based on hierarchy of control, including:

- 6.7.1. Avoidance of exposure, where practicable
- 6.7.2. Isolation of sources of radiation, where practicable, through shielding, containment and remote handling techniques
- 6.7.3. Engineering controls to reduce radiation levels and intakes of radioactive materials in the workplace
- 6.7.4. Adaptation of safe work practices, including work methods that make use of time, distance and shielding to minimise exposure
- 6.7.5. Where other means of controlling exposure are not practicable or not sufficient, the use of approved personal protective equipment (PPE), which provides appropriate protection, whilst also considering the risks to musculoskeletal hazards as a result of use

6.8. Personal Protective Equipment (PPE)

Employers shall ensure that all nurses, midwives and carers, who carry out or assist with procedures exposing them to radiation, are provided with appropriate PPE, which also controls the risks to musculoskeletal hazards as a result of use. Employers shall ensure that all PPE provided to workers:

- 6.8.1. Meets and exceeds the most current Australian/New Zealand Standard for PPE against diagnostic radiation¹¹
- 6.8.2. Is selected, periodically reviewed and replaced in consultation with affected staff, as per relevant guidance and legislation
- 6.8.3. Is worn as part of a suite of controls and a safe system of work, that includes interventions such as the rotation of tasks and regular breaks

6.9. Radiation monitoring and dose assessments

Health facilities shall ensure that a radiation monitoring program is designed, approved, implemented and regularly reviewed. The program shall provide for:

- 6.9.1. Identification of relevant sources of radiation exposure within a workplace
- 6.9.2. Assessment of the radiation doses received by employees, including determination of parameters which affect the assessment dose, as required by the appropriate authority (ARPANSA)
- 6.9.3. Detection of changes in the circumstances of exposure, as necessary
- 6.9.4. Acquisition of sufficient information on radiation exposure in the workplace to enable optimisation measures to be adopted

¹¹ At the time of the 2020 Review of this policy, the following standard was the most current The Australian/New Zealand Standard (AS/NZS 4543.3:2000) IEC 61331-3:1998 "Protective devices against diagnostic medical X radiation. Part 3: Protective clothing and protective devices for gonads"

7. Relevant legislation

- Occupational Health and Safety Act 2004
- Occupational Health and Safety Regulations 2007
- Radiation Act 2005
- Radiation Regulations 2017

8. Relevant guidance

- ANMF (Vic Branch) Occupational Health and Safety Policy
- Code for Radiation Protection in Medical Exposure (2019) - ARPANSA
- Code for Radiation Protection in Planned Exposure Situations (2020) - ARPANSA
- The Australian/New Zealand Standard (AS/NZS 4543.3:2000) IEC 61331-3:1998 "Protective devices against diagnostic medical X radiation. Part 3: Protective clothing and protective devices for gonads"

ⁱ ANMF (Vic Branch) acknowledges recent studies that show that continual exposure to constant low-energy non-ionising radiation over a long period of time may have an adverse effect on health, however more research in this area is required.

Studies of note:

Redmayne M, Johansson O: Could myelin damage from radiofrequency electromagnetic field exposure help explain the functional impairment electrohypersensitivity? A review of the evidence. *Journal of Toxicology and Environmental Health, Part B* 2014, 17:247-258.
Pall, 2016, A review: microwave EMF's cause at least 13 neuropsychiatric symptoms including headaches