THE ANNUAL REPORT OF

THE RADIATION ADVISORY COMMITTEE

FOR THE FINANCIAL YEAR ENDING JUNE 2024

RADIATION ADVISORY COMMITTEE

Melbourne, Australia

ISBN 1035-7912

This document is available on-line at:

https://www2.health.vic.gov.au/public-health/radiation/radiation-regulatory-framework/radiation-advisory-committee

The Hon Mary-Anne Thomas
Minister for Health

Dear Minister

Pursuant to Section 110 of the *Radiation Act 2005*, the Radiation Advisory Committee submits the 2024 annual report of the Committee for presentation to Parliament.

Yours faithfully

Dr Joanna Lia Wriedt
Chair
RADIATION ADVISORY COMMITTEE

CONTENTS

RADIATION ADVISORY COMMITTEE

The Radiation Advisory Committee (the Committee) is established under Part 10 of the *Radiation Act 2005*. For the purposes the 2023-24 financial year, the term of appointment for the Committee was for the period from 17 August 2020 to 16 August 2023. A new Committee was appointed for the period 17 August 2023 to 16 August 2026.

(i) Composition

The Committee met on 4 occasions during the 2023-24 financial year.

The members of the Committee from 1 July 2023 to 16 August 2023 are listed in Table 1. The Committee met once during this period.

Table 1	
Dr Joanna Lia Wriedt **(Chair)** Physiologist, Epidemiologist and Lawyer **Meetings attended: 1**	**Dr David Bernshaw** Consultant Radiation Oncologist Peter MacCallum Cancer Centre **Meetings attended: 0**
A/Prof Ken Karipidis Assistant Director Assessment and Advice Australian Radiation Protection and Nuclear Safety Agency **Meetings attended: 1**	**Dr Roslyn Drummond** Radiation Oncologist Peter MacCallum Cancer Centre **Meetings attended: 1**
Associate Professor Eddie Lau Radiologist and Nuclear Medicine Specialist Austin Health **Meetings attended: 1**	**Mr Geoffrey Dick** Deputy Chief Radiographer and CT Supervisor Medical Imaging Angliss Hospital Eastern Health **Meetings attended: 1**
Dr Zoe Brady Chief Physicist Alfred Radiology and Nuclear Medicine Department Alfred Health **Meetings attended: 1**	**Ms Min Ku** Professional Standards Manager Australian Society of Medical Imaging and Radiation Therapy **Meetings attended: 1**
Dr Peter Francis Head of Nuclear Medicine / PET Royal Children's' Hospital **Meetings attended: 0**	**Dr Tomas Kron** Director of Physical Sciences Peter MacCallum Cancer Centre and University of Melbourne **Meetings attended: 1**

Dr Fiona Charalambous Assistant Director National Uniformity Policy and Secretariat Australian Radiation Protection and Nuclear Safety Agency **Meetings attended: 0**

The members of the Committee from 17 August 2023 to 30 June 2024 are listed in Table 2. The Committee met three times during this period.

Table 2	
Dr Joanna Lia Wriedt **(Chair)** Physiologist, Epidemiologist and Lawyer **Meetings attended: 1**	**Dr David Bernshaw** Consultant Radiation Oncologist Peter MacCallum Cancer Centre **Meetings attended: 3**
A/Prof Ken Karipidis Assistant Director Assessment and Advice Australian Radiation Protection and Nuclear Safety Agency **Meetings attended: 3**	**Mr Steve Crosling** Consultant RadTest Australia **Meetings attended: 2**
Associate Professor Eddie Lau Radiologist and Nuclear Medicine Specialist Austin Health **Meetings attended: 2**	**Mr Geoffrey Dick** Deputy Chief Radiographer and CT Supervisor Medical Imaging Angliss Hospital Eastern Health **Meetings attended: 3**
Dr Solveig Grenfell Radiation Oncologist Campus Director, Peter MacCallum Bendigo Radiotherapy Centre **Meetings attended: 2**	**Ms Min Ku** Professional Standards Manager Australian Society of Medical Imaging and Radiation Therapy **Meetings attended: 3**
Dr Tomas Kron Director of Physical Sciences Peter MacCallum Cancer Centre and University of Melbourne **Meetings attended: 2**	**Ms Monique Gaspar** General Manager - Delivery and Growth Core Connect Group **Meetings attended: 2**
Dr Fiona Charalambous Assistant Director National Uniformity Policy and Secretariat Australian Radiation Protection and Nuclear Safety Agency **Meetings attended: 2**	**Associate Professor Mohamed Badawy** Chief Physicist and Radiation Safety Officer Monash Health **Meetings attended: 2**

(ii) Responsibilities

The function of the Committee is to advise the Minister for Health or the Secretary of the Department of Health and Human Services (the Department), on any matters relating to the administration of the *Radiation Act 2005*, referred to it by the Minister or the Secretary. Matters that may be referred to the committee include:

(a) the promotion of radiation safety procedures and practices.

(b) recommendation of the criteria for the licensing of persons and the qualifications, training or experience required for licensing.

(c) recommendation of which radiation sources should be prescribed as prescribed radiation sources.

(d) recommendation of the nature, extent and frequency of tests to be conducted on radiation apparatus and sealed radioactive sources.

(e) codes of practice, standards or guidelines with respect to particular radiation sources, radiation practices or uses.

Section 110 of the Radiation Act requires that the Committee must give the Minister a report on its activities during a financial year no later than 1 November following that year.

The terms of reference for the Committee are provided in Appendix 1.

1. Introduction

During the financial year, one issue was referred to the committee on behalf of the Secretary of the Department, namely concerns raised in relation to X-ray security screening at correctional facilities in Victoria (see item 2.1 below).

Throughout the year a number of issues were otherwise considered by the Committee of its own initiative, including:

- national uniformity of radiation legislation in Australia.
- the regulatory requirements for various ionising radiation practices, including:
    a) X-ray screening at correctional facilities.
    b) Remote operation of medical radiation sources.
    c) The use of artificial intelligence in the use of medical radiation sources.
- non-ionising radiation matters.

The Committee continues to pay close attention to the use of and developments in the use of ionising radiation in the medical and the non-medical fields due to the risks associated with exposure to ionising radiation. These risks need to be balanced by the positive benefits associated with the use of ionising radiation.

The Committee would like to thank the Health Regulator of the Department of Health, in particular Mr Morrie Facci, for its continuing assistance and support.

2. Ionising radiation

2.1 X-ray Security Screening at Correctional Facilities in Victoria

The committee was advised that the Security Standards Unit, Security & Intelligence Division, Corrections Victoria, Department of Justice and Community Safety wrote to the department asking if it had any guidance on medical ailments or conditions which would be impacted by radiation emitted by X-ray security equipment. Corrections Victoria was seeing a few visitors who stated they have varying medical conditions which exempt them from being scanned with this equipment. A medical certificate citing such an exemption can easily be obtained from a bulk billing general practitioners.

The committee recommended that the department write to both to The Royal Australian College of General Practitioners and to the Australian Health Practitioner Regulation Agency in relation to medical certificates being issued by general practitioners for medical conditions which exempt persons from being scanned.

The committee also advised that it was of the opinion that there was no scientific evidence that the levels of X-rays generated by security scanners can cause or exacerbate any medical condition.

The committee wrote to the Department of Justice and Community Safety advising it of the committee's views.

2.2 Integrated Regulatory Review Service mission of International Atomic Energy Agency (IAEA)

The Committee was reminded that the IAEA Integrated Regulatory Review Service (IRRS) mission visited Australia during 5–16 November 2018. IRRS reviewed the legal and governmental framework of Australian States and Territories and the Commonwealth for nuclear and radiation safety against the IAEA's Safety Standards. A follow-up mission will be conducted in 2021-22.

The IRRS report on the mission has been published on ARPANSA's website and is available at:
https://www.arpansa.gov.au/sites/default/files/irrs_australia_report_2018.pdf

The IRRS report made four notes of good practice, 23 recommendations and 12 suggestions for improvement. The primary focus of the recommendations centred on issues of national uniformity, with emphasis given to the importance of ensuring a consistent level of protection of people and the environment through effective coordination and harmonized implementation of codes and guides by the Commonwealth, States, Territories and regulatory bodies.

The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee (AHPPC) led the development of an IRRS action plan to address the IRRS recommendations. EnHealth is supported in this by the work of the Radiation Health Expert Reference Panel (RHERP).

A number of projects addressing some of the recommendations in the report were in progress, including:

- The development of a national model of authorisations.
- Uniform incident reporting requirements.
- Financial assurance for radioactive sources to ensure appropriate disposal of a radioactive source in the event of the bankruptcy of a company possessing the source, for example.

The Department advised the Committee that it expected that Australian jurisdictions would have substantially addressed the observations, recommendations and suggestions in the IRRS mission report by the time of the follow-up IRRS mission expected to occur in 2021-22.

2.3 Remote control platform for CT and MRI scanners

The Committee advised the Department of a remote-control platform for computed tomography (CT) and magnetic resonance imaging (MRI) scanners which would be able to be used for remote operation of scanners, standardising and monitoring of scanner equipment and training of medical personnel. One medical imaging technologist would be able to collaborate with up to three scanning workplaces simultaneously.

The Committee advised that the aspect of remote use of scanners could pose some issues in relation to the licensing and oversight of users. The Department acknowledged that it may have to address those issues in the future.

2.4 Remote operation of medical radiation sources

The committee advised the department of medical radiation equipment servicing companies who can service equipment remotely, the equipment being able to be energised remotely when in service mode. Although there have been no reported incidents involving such servicing of equipment, there existed the possibility that a person could be in the same room as the equipment when it is energised. The department was aware of this issue.

The committee advised the department that chiropractors in NSW were setting up patients for radiography and radiographers were initiating the exposures remotely. The committee was concerned that chiropractors were acting outside of their scope of practice. The department had been approached informally concerning remote initiation of exposures by radiographers where the patients are set up by non-radiographers. The department needs to consider whether such remote initiation of radiation exposures complies with the ARPANSA Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (2008). The definition of what constitutes “use” of radiation sources also needs to be considered.

The committee concluded that remote operation of medical radiation sources is an issue that needs additional consideration by the department.

2.5 Artificial intelligence in radiation oncology

The Committee also noted that an advanced artificial intelligence (AI) based diagnostic platform was being developed internationally to aid in the creation of AI-developed models for organ segmentation for the modelling of treatment volumes - a

labour-intensive step in radiation oncology that can be a bottleneck in the cancer treatment clinical workflow.

The Committee advised that the use of AI in radiation oncology could pose some issues in relation to the licensing of users, e.g. who would be held to account if something went wrong and how the AI would be “supervised”. The Department acknowledged that it may have to address these issues in the future.

2.6 Safety reflections

The Committee meetings have a standing agenda item entitled Safety Reflections. This agenda item provides an opportunity for the members of the Committee to contribute reflections on broader safety considerations in order to place radiation safety considerations into a wider perspective on matters relating to safety.

3. Non-ionising radiation

3.1 Scientific Papers

The followed scientific paper was considered by the Committee during the year.

Gryz, K.; Karpowicz, J.; Zradzinski, P. Complex Electromagnetic Issues Associated with the Use of Electric Vehicles in Urban Transportation. Sensors 2022, 22, 1719. https://doi.org/10.3390/s22051719

The study characterised and measured electromagnetic fields (EMF) in electric vehicles (including cars, buses, trams and trolleys) in different settings (including whilst stationary, moving and charging). All the measured EMF levels were much lower than the safety limits prescribed by international guidelines.

3.2 Evidence on whether radiofrequency radiation causes cancer

The Committee advised the department that, in 2011, the International Agency for Research on Cancer classified radiofrequency radiation as Class 2B, possibly carcinogenic, based on limited evidence from case-control studies showing a small association between mobile phone use and brain cancer as well as experimental studies showing cancer induction in rodents. Since the IARC classification, a number of large cohort studies have not found an association between mobile phone use and brain cancer and ecological studies (like Karipidis et al, 2018, https://doi.org/10.1136/bmjopen-2018-024489) have shown that the incidence rates of brain cancer have remained stable. Further, a recent systematic review by Pinto et al, 2023, https://doi.org/10.3390/ijerph20032071) reported no overall association between exposure to radiofrequency radiation and cancer in rodents. Research is continuing and IARC is planning to reassess its 2011 classification.

3.3 Evidence concerning childhood leukaemia in children exposed (long-term) to 50/60 Hz magnetic fields above 0.4 µT

The committee advised the department that the current scientific evidence does not establish an association between living near powerlines and childhood leukaemia. Electric powerlines, substations, transformers and other electrical sources such as common electrical appliances and home wiring all generate extremely low frequency (ELF) electric and magnetic fields (EMF). Most of the research indicates that ELF EMF exposure normally encountered in the environment, including in the vicinity of powerlines, does not pose a risk to human health. However, there are some epidemiological studies that have reported a possible association between prolonged exposure to ELF magnetic fields above 0.4 µT and increased rates of childhood leukaemia. However, the epidemiological evidence is weakened by various methodological problems such as potential selection bias and confounding. Furthermore, this association is not supported by laboratory or animal studies and no credible theoretical mechanism has been proposed.

3.4 WHO systematic review on whether radio waves from mobile phone use affect cognitive function

The committee advised the department that the World Health Organization commissioned a series of systematic reviews in 2019 to help assess whether exposure to radiofrequency (RF) electromagnetic fields causes any health effects. The latest of these to be published is a systematic review of observational studies investigating whether RF exposure from sources like mobile phones affects cognitive function. The review found that RF exposure from mobile phones does not affect learning, memory, attention span and other cognitive functions like coordination. The review did acknowledge that the research is limited and further high-quality studies are needed. The review is available at:
https://www.sciencedirect.com/science/article/pii/S0160412024003659?via%3Dihub

3.5 New ICNIRP statement on airborne ultrasound

Airborne ultrasound consists of inaudible sound waves in air and used for various purposes in industrial and public settings and is also often produced as an unintentional by-product by many sources. It is also being increasingly used in virtual reality technology to create the experience of touch.

The committee advised the department that the International Radiation Protection Association (IRPA) published interim guidelines on limiting human exposure to airborne ultrasound in 1984, based on the limited scientific evidence that was available at that time. Forty years on, the International Commission on Non-Ionizing Radiation (ICNIRP) recently published a statement on the validity of the 1984 interim guidelines, available at:
https://www.icnirp.org/cms/upload/publications/ICNIRPUltrasoundStatement2024.pdf

Research since the IRPA guidelines has increased the knowledge base but there are still significant data gaps that need to be addressed, including research needs related to health outcomes and improved dosimetry. In its 2024 statement, ICNIRP makes a number of recommendations for future research on airborne ultrasound.

3.6 Risks of using ultraviolet (UV) curing units for drying gel nail polish

The Committee expressed concern at the use of UV curing units for drying gel nail polish and its association with a risk of with subungual squamous cell carcinoma. The Committee suggested that production of information pamphlets for salon owners about the hazards of these units should be considered. ARPANSA had conducted a study which tested the UV exposure from these units and found that they pose a low risk to users when they are used for the required drying times. A summary of ARPANSA's findings is available at:
https://www.arpansa.gov.au/news/study-finds-low-uv-risk-home-nail-drying

3.7 The Committee's view on possible health effects of radiofrequency radiation

The publication of the new ARPANSA standard and the scientific studies considered by the Committee during the year has not altered the Committee's position that there is no substantive evidence linking exposure to radiofrequency radiation at levels below the limits of the standard to an increased risk of cancer or other adverse health outcomes in humans. In light of ongoing public interest and concerns over mobile phones, base stations, smart meters and 5G technology, the Committee will continue to maintain a watching brief.

3.8 The Committee's view on possible health effects of power frequency electromagnetic fields.

The Committee's position, based on its scrutiny of the literature, is that epidemiological evidence is lacking for a consistent and reproducible association between exposure to power frequency electromagnetic fields and adverse health outcomes in humans. Research in this area is complex in regard to exposure measurement and disease type studied and, as a result, the research outcomes can vary from study to study. The Committee will continue to maintain a watching brief.

4. Other matters

4.1 Department's restructure – the Health Regulator

The committee was briefed on the new structure of the department and the formation of the Health Regulator within the People Operations Legal and Regulation Division of the department.

The committee discussed the new structure, noting the importance of adequately capturing the complexity of radiation regulation.

4.2 Radiation Team Compliance and Enforcement Policy and Procedure

The committee was briefed on the Radiation Team Compliance and Enforcement Policy and Procedure developed by the department.[1]

[1] This briefing preceded the formation of the Health Regulator.

Appendix 1 - Terms of reference of the Radiation Advisory Committee

Role

The Radiation Advisory Committee is established under the Radiation Act 2005 (the Act). The committee's function is to consider, advise and report to the Minister for Health or the Secretary of the department on any matters relating to the administration of the Act and Radiation Regulations 2017, including:

a) the promotion of radiation safety procedures and practices;

b) recommending the criteria for the licensing of persons to use radiation sources and the qualifications, training or experience required by those persons to do so;

c) recommending which radiation sources should be prescribed as prescribed radiation sources;

d) the radiation safety standards to be specified under section 29 of the Act;

e) the nature, extent and frequency of tests to be conducted on prescribed radiation sources and the specification of radiation safety tests under section 30 of the Act;

f) codes of practice, standards or guidelines with respect to particular radiation sources, radiation practices or uses.

Responsibilities and functions

The Committee may provide advice to the Department in relation to:

- the administration and amendments of the Radiation Act 2005 and the Radiation Regulations 2017;
- the licensing of persons and companies to use radiation sources and conduct radiation practices;
- the inspection and testing of radiation sources;
- new radiation sources and technologies;
- the development, implementation and review of state and national codes, standards and guidelines;
- the transportation, storage and disposal of radioactive materials;
- the security of radioactive sources;
- radiation incidents;
- non-ionising radiation matters including:
    - health effects of radiofrequency electromagnetic fields (including mobile communications);
    - health effects of extremely low frequency (ELF) electromagnetic fields (including power frequency fields); and
    - lasers and intense pulsed light (IPL) sources.
- the promotion and improvement of radiation safety in Victoria;
- developments that impact on best practice for radiation safety; and
- any other matter put to it by the Minister.

In addition to this the Committee may deliberate on other matters that are relevant to its objectives. This includes identifying opportunities, issues of concern including resource constraints and research needs.

Membership

Requirements

Under the Radiation Act 2005, the Committee must consist of at least 5 members appointed by the Minister for Health.

It is government policy that the membership of committees accurately reflect the composition of the Victorian community, including gender balance.

A member is appointed for the term, not exceeding 3 years, specified in the instrument of appointment, but is eligible for re-appointment.

Expressions of interest are sought towards the end of the outgoing Committee's three-year term from persons wishing to apply for membership of the Committee for the next three years.

Chairperson

The Chairperson is elected by the consensus of the Committee. A Chairperson is appointed for the term, not exceeding 3 years, specified in the instrument of appointment, but is eligible for re-appointment.

Expressions of interest are sought towards the end of the outgoing Committee's three-year term from members wishing to apply for Chairperson of the Committee for the next three years.

Conduct

Members will act in accordance with legal requirements, ethical standards, relevant policies including conflict of interest, codes of conduct and the Department of Health' values.

Induction of new members

The Chairperson, supported by the Secretariat, will provide newly appointed members with all necessary and relevant information regarding the Committee's responsibilities and any other background information to enable them to understand the scope of operations and duties and responsibilities. This includes the Terms of Reference as well as the minutes of the past three meetings.

Observers

The Chairperson or the Minister may invite any person who is not appointed as a member to attend meetings to act as an observer and who may participate in discussions. Such a person may include a technical subject expert.

Observers are to receive all relevant information provided to members of the Committee except that designated confidential.

Removal and resignation from office

A member may resign from office by notice in writing signed by that person and delivered to the Minister and the Department.

The Minister may remove a member from office at any time for any reason.

Acting appointments

The Minister may appoint a person to act in the place of a member who is absent from duty or who, for any other reason, is unable to perform the duties of the office.

An acting member is appointed for the term, and on such other terms and conditions, as are specified in the instrument of appointment and may perform all the duties, of the member for whom he or she is acting.

The Minister may at any time terminate an acting appointment.

Conflict of interest

Committee members have a responsibility to avoid conflicts of interest and to notify other members when a conflict arises.

A conflict of interest occurs when a person's interests conflict with their responsibility to act in the best interests of the Committee.

A conflict of interest may be actual, potential, or perceived, and may be financial or non-financial. A conflict in itself does not imply wrongdoing but managing conflicts of interest is essential to maintain the integrity of the Committee. Management of a conflict of interest will be on a case-by-case basis but may at times require a member to recuse themselves from a discussion and/or decision.

The onus for declaration of any conflict of interest rests with each member.

If members are in doubt as to whether they have a conflict of interest, they should speak with the Chairperson prior to any meetings, discussions or decisions on the relevant issue.

Meeting procedure

Subject to the Radiation Act 2005, the committee may regulate its own proceedings.

Frequency of meetings

Meetings will be scheduled for the first Thursday of every second month, starting February. If required, additional meetings will be scheduled as determined by the Department.

Attendance and quorum requirements

A minimum of five members constitutes a quorum for meetings of the Committee. Members are expected to commit the required time and attend a minimum attendance of 75% of meetings. Members may participate in the meeting by telephone or video links.

Committee recommendations and decision making

A decision as to a recommendation to be made by the Committee is determined by a majority of votes of members who are present and voting on the question. In the event of a deadlock, the Chairperson shall have a casting vote. Prior to making a decision, the Committee will give due consideration to all the relevant information, issues, options and implications.

Members may be required to provide advice to the Department out-of-session.

Sub-committees

The Committee may, with the consent of the Minister, request a person to assist the Committee with the Committee's work or a sub-committee of the Committee with the sub-committee's work.

The Department selects and appoints members to the sub-committees.

The Chairperson of the sub-committee will provide regular reports to the Committee and refer matters of relevant importance to the Committee.

Secretariat support

Secretariat support to the Committee and any sub-committees is provided by the Department. The Secretariat is nominated and overseen by the Health Regulator within the Department of Health Victoria.

Agenda, papers and minutes

Agendas and meeting papers will be prepared by the secretariat of the Committee in consultation with the Chairperson and distributed no later than one week prior to the meeting.

Agendas and papers may be circulated to members of the Committee by hard copy or electronic methods.

The Secretariat will minute all meetings and will distributed to the Committee within three weeks following the meeting. Minutes will be ratified at the next Committee meeting.

Confidentiality

Members of the Committee must not discuss any deliberations or circulate any meeting agendas, minutes, papers or other materials publicly, or in any other forum, without the consent from the Minister for Health.

Communication with the media

Committee members must not communicate with the media regarding discussions held in committee meetings. Media enquiries regarding such matters must be directed to the Department.

Remuneration

A Committee member is entitled to be paid the fees and allowances from time to time determined by the Governor in Council. Under the *Appointment and Remuneration Guidelines for Victorian Government Boards, Statutory Bodies and Advisory Committees* (2018), the Committee is classified as a group C organisation, band 1 and Committee members are entitled to receive remuneration consistent with the guidelines. This also applies to any sub-committees of the Committee

A person who assists the Committee or a subcommittee of the Committee is entitled to be paid the fees and allowances from time to time determined by the Governor in Council.

Evaluation

Annual Report of the Committee

The Committee must give the Minister a report on its activities during a financial year no later than1 November following that year.

Committee performance

The Committee will conduct an annual collective and individual evaluation of its performance (performance metrics to be determined). The evaluation will be presented to the Committee and to the Department.

The purpose of performance assessment is to enable performance areas that require improvement to be identified and addressed.

Review process for Terms of Reference

The Terms of Reference will be reviewed by the Committee at least every three years or as required jointly lead by the Committee and the Department. Changes to the Terms of Reference will be put to the Committee after considering any recommendations that come forward after a review.