

**Radiation Safety Advisory  
Council  
Annual Report 2023**

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# Foreword

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This is the 2023 annual report of the Radiation Safety Advisory Council (the Council), produced in accordance with section 85 of the Radiation Safety Act 2016 (the Act).

Section 85(1) of the Act requires the Council to provide the Minister of Health (the Minister) with a report at least once each year, setting out advice provided to the Director for Radiation Safety (the Director), the Director-General of Health and the Minister over that period.

This annual report covers the Council's activities for the period 1 January 2023 to 31 December 2023.

The Council was established by section 80 of the Act and has the functions set out in section 81 of the Act.

For the reporting period, formal advice was provided to the Director under section 81(b)(ii) of the Act on adopting recommendations, policies, codes of practice and standards relating to radiation safety.

No recommendations and no advice were provided under sections 81(a), (b)(i), (b)(iii) or (c) of the Act.

The Council's activities for the reporting period are set out in this report.

The Council's next annual report is due by 30 April 2025.



**Brian Lunt**  
Chairperson  
Radiation Safety Advisory Council

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# Background

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## The Radiation Safety Act 2016

The Radiation Safety Act 2016 (the Act) came in force in March 2017 to establish a framework to protect the health and safety of people and the environment from the harmful effects of ionising radiation while allowing for the safe and beneficial use of ionising radiation. The Act also enables Aotearoa New Zealand to meet its international obligations relating to radiation protection, radiation safety and security, and nuclear non-proliferation. The Act repealed and replaced the Radiation Protection Act 1965.

## Administration of the Act

The Minister of Health (the Minister) is the Minister responsible for the Act and the Ministry of Health – Manatū Hauora (the Ministry) administers the Act. The Ministry's Office of Radiation Safety (ORS) conducts the day-to-day administration of the Act, and ORS is managed by the Director for Radiation Safety (the Director). Most of the duties and functions of the Act rest with the Director. The Director-General of Health has some duties under the Act in relation to appointing and employing the Director. The Minister has powers and duties under the Act to:

- appoint Radiation Safety Advisory Council (Council) members
- request advice from the Council
- grant authorisations with respect to nuclear material (currently delegated to the Director)
- recommend fees and some exemptions made in regulations
- recommend the setting of acceptable levels of radioactivity and dose limits specified in the Act.

Besides the Act, other radiation safety requirements are specified in the Radiation Safety Regulations 2016 (the Regulations) and codes of practice (the Codes) issued under the Act. The Codes specify the technical requirements that individuals and organisations must comply with when they deal with radiation sources.

ORS also provides secretariat support for the Council.

## The Radiation Safety Advisory Council

The Act requires the Council to have four members to constitute a quorum. The Council must consist of at least:

- two members who have appropriate knowledge, expertise or interest in radiation and nuclear safety and
- two members who have appropriate knowledge and experience in the use of radiation and radiation sources and
- one lay member.

The Council is funded to comprise up to seven members. The Act requires the Council to appoint a member as the chairperson and provides discretion for the Council to appoint another member as the deputy chairperson. Members are appointed within the terms and conditions specified by Cabinet for this type of committee.

Council members for the 2023 annual report year were as follows.

- Brian Lunt (chairperson), medical physicist in the public and private Aotearoa New Zealand health care sectors
- Lois Hutchinson (deputy chairperson), former chief executive of the Transport Accident Investigation Commission.

Members who joined the Council during the year

- Dr Casey Davies, health, safety and compliance specialist for Faculty of Science | Te Kaupeka Pūtaiao at the University of Canterbury | Te Whare Wānanga o Waitaha
- Dr Iain Ward, radiation oncologist at Canterbury Regional Cancer and Haematology Service
- Lynne Greig, former chief medical physicist at the Blood and Cancer Centre, Wellington Regional Hospital
- Dr Pooja Yadav, radiation safety advisor at the University of Auckland | Waipapa Taumata Rau
- Sally McMillan, practising medical imaging technologist in Central Otago.

Members whose term of office expired during the year

- Carl Dawson, managing director of Radiation Protection Services Ltd (RadPro)
- Dr John Laban, radiation physics consultant, BSc (Hons) and PhD in solid states physics
- Karen Coleman, radiology manager at Te Whatu Ora – Capital, Coast and Hutt Valley
- Dr Andy Cousins, chief radiation oncology physicist at Christchurch Hospital.

## Functions

The Council is part of the established radiation safety framework, contributing to the protection of people and the environment from the harmful effects of ionising radiation. The Council achieves this by carrying out the functions set out in section 81 of the Act. It provides independent advice to the Director, the Minister or the Director-General of Health on matters and standards relating to radiation safety.

The Council may also make recommendations to:

- the Minister, on exercising the Minister's powers under the Act
- the Director, on adopting recommendations, policies, codes of practice and standards relating to radiation safety
- the Director, in respect of authorisations the Director has referred to the Council.

In carrying out its functions, the Council may appoint advisory or technical committees under section 82 of the Act, regulate its procedure in any manner it thinks fit under section 83 of the Act and consult any person or body it considers appropriate under section 84 of the Act.

# Council activities in 2023

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The Council held five meetings over the 2023 reporting period, with the support of the secretariat. Matters considered by the Council were Council administration, progression of the three recommendations made to the Director of Radiation Safety in 2022, general matters on radiation safety and codes of practice for naturally occurring radioactive material (NORM) in industrial by-products as described below.

- Council administration
  - Confirming Council members appointments to ensure the Council could function following the expiry of first-term members' appointments
- General matters
  - Considering emerging radiation safety issues
  - Providing regulatory oversight of cyclotrons and related technologies
  - Considering whether Aotearoa New Zealand's radiation safety legislation adequately addresses the International Atomic Energy Agency's (IAEA's) standards for NORM, with particular reference to bulk material.
- Considering progression of recommendations
  - Personal dosimetry monitoring requirements
  - Radiation safety aspects of iodine-131 (I-131) treatment of thyrotoxic cats
  - Survey meters – equipment to detect and measure ionising radiation
  - Adopting the ISO/IEC Directives, Part 2.
- Codes of Practice:
  - Naturally occurring radioactive materials (NORM): The Council considered recommending the IAEA recommendations be incorporated in a Code for managing industrial processes that enhance NORM, for example, heavy mineral concentrate mining (continuing work begun in 2021).
  - Personal dosimetry dose records: The Council requested information on the rationale behind current dosimetry record requirements with a view to recommending reducing the administrative obligations for source licence holders.

The matters raised in this reporting period remain under consideration and form part of the 2024 work programme.

## Advice and recommendations

The Council received no requests for advice from the Director or the Minister on general matters relating to or affecting radiation safety or standards relating to radiation safety under s81(a) of the Act.

The Council provided no advice or recommendations to the Minister on the exercise of the Minister's powers under s81(b)(i) of the Act.

## Follow-up on recommendations

The Council made no new recommendations in 2023. However, consideration was given to the Director's responses to the three letters of recommendations made under s8(b)(ii) of the Act in 2022 (as described below).

1. Letter of recommendation (LOR#2-22/1) 'Radiation safety aspects of I131 treatment of thyrotoxic cats'
  - The chairperson informed the Council that, based on his experience, the code of practice covering iodine-131 (I-131) treatment in veterinary medicine would benefit from including more practical detail and better alignment with current veterinary practices. The expectation is that this would enhance the protection of veterinary staff and the public following the therapeutic use of I-131 in veterinary medicine.
  - The ORS has published veterinary radiation guidelines in the form of *Compliance Guide for Veterinary Radiation: ORS G9*<sup>1</sup>. The Council has accepted the published compliance guide as this guide addresses the Council's concerns about the I-131 treatment of thyrotoxic cats.
2. Letter of recommendation (LOR#3-22/1) 'Equipment for the detection and measurement of ionising radiation (survey meters)'
  - Aotearoa New Zealand's regulatory environment requires the use of equipment for detecting and measuring ionising radiation. However, the Council has expressed a concern on variations in user knowledge about the correct selection and use of radiation measuring equipment for monitoring.
  - The Council was advised that the Director has commissioned the publication of an information sheet on this matter, which will be available to view on the Ministry website in due course. The Council accepted the Director's response and will continue to review progress.
3. Letter of recommendation (LOR#5-22/1) 'Adoption of the ISO/IEC Directives, Part 2 Principles and rules for the structure and drafting of ISO and IEC documents – Section 7 Verbal forms for expressions of provisions in the writing of Codes'.
  - The Council has identified that the different codes of practices are written with some variations in style and that there would be benefit in using internationally accepted standardised terminology when defining technical standards. The Council understands that a standardised terminology has advantages in the application and interpretation of codes.
  - The Council has been advised that a statutory review of the Codes is in progress with the Director expecting the review of all Codes to be completed by 30 June 2024. The Council accepted the Director's response and will monitor progress on the revision of the relevant Codes.

## Requests for information from the Director

The Council requested further information from the Director on the following two matters under consideration.

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<sup>1</sup> Ministry of Health. 2023. Compliance Guide for Veterinary Radiation: ORS G9. Wellington: Ministry of Health. URL: [www.health.govt.nz/publication/compliance-guide-veterinary-radiation](https://www.health.govt.nz/publication/compliance-guide-veterinary-radiation) (accessed 19 April 2024).

1. Letter to the Director (LD#1-22/1) 'Re: Inclusion of IAEA recommendations for bringing bulk materials under the Radiation Safety Act'. This request seeks advice on the appropriate mechanism to ensure regulatory oversight of bulk materials such as NORM in mining in Aotearoa New Zealand.
2. Letter to the Director (LD#4-22/1) 'Clarification on the requirement to obtain previous dose records'. This request seeks information about the intent of existing requirements to do with record keeping in Codes issued under section 86 of the Act.

# Work programme for 2024

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The Council considered a wide range of potential topics for its work and developed a work programme for the 2024 reporting period. Areas under active consideration for the next reporting period are described below.

## General matters

- Authorisations (licences and consents granted under the Act)
- Standards: disposal of radiation sources
- Incidents: the reporting level and procedure.

## Next annual report

The Council's next annual report will be for the period 1 January 2024 to 31 December 2024 and is due by 30 April 2025.

# Appendix 1: Membership

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In 2023, the Council experienced a transition in membership. The former Council presided over the 9th, 10th and 11th Council meetings, while the newly formed Council assumed responsibility for overseeing the 12th and 13th Council meetings. A full list of Council member attendance is provided in appendix 2.

Pursuant to section 80 of the Radiation Safety Act 2016, former Minister of Health, Hon Dr Ayesha Verrall, re-appointed Brian Lunt as a non-layperson member and Lois Hutchinson as a layperson member to the Council for terms of office that commenced on 11 September 2023.

In accordance with section 80 of the Radiation Safety Act 2016, the Minister appointed five new non-layperson members (Dr Casey Davies, Dr Iain Ward, Lynne Greig, Dr Pooja Yadav and Sally McMillian) for three-year terms of office, which commenced on 11 September 2023.

Biographical profiles for the current members of the Radiation Safety Advisory Council are provided immediately below.

## **Brian Lunt (Chairperson)**

Brian Lunt has worked as a medical physicist involved in the safe and effective application of radiation in diagnostic radiology, nuclear medicine, cardiology, dentistry and veterinary medicine in the public and private health care sectors in Aotearoa New Zealand.

## **Lois Hutchinson (Deputy chairperson)**

Lois Hutchinson is the former chief executive of the Transport Accident Investigation Commission. She has 30 years' experience in senior executive roles across the state sector, working in health delivery, regulatory services and transport. She developed expertise in delivering both domestic and international mandated services that operate to avoid or reduce harm to people and organisational operating environments. Lois holds master's degrees in public policy (Victoria University of Wellington) and managing organisational performance (Cranfield University, United Kingdom). She was made a Fellow of the Australian Institute of Health and Safety (Hon.) in 2019 and was appointed to the WorkSafe New Zealand board in 2022.

## **Dr Casey Davies**

Dr Casey Davies has worked in the tertiary research sector within Aotearoa New Zealand for the past 10 years as a radiation safety officer and hazardous substances specialist. Casey is currently the health, safety and compliance specialist for Faculty of Science | Te Kaupeka Pūtaiao at the University of Canterbury | Te Whare Wānanga o Waitaha and is working with a number of governing bodies to develop improvements in laboratory health, safety and compliance. He has a PhD in biophysical chemistry and a postgraduate diploma in health sciences and is a professional member of the New Zealand Institute of Safety Management and the Health and Safety Association of New Zealand.

## **Dr Iain Ward**

Dr Iain Ward is a radiation oncologist who has practised in Christchurch for 20 years in both the public and private sectors. He has an interest in promoting quality in radiation therapy and in systems that enable clinicians to learn from radiation incidents and near-miss events. He is a Fellow of both The Royal Australian and New Zealand College of Radiologists and The Royal Australasian College of Physicians.

## **Lynne Greig**

Lynne Greig has over 20 years' experience as a chief medical physicist and radiation safety officer in Aotearoa New Zealand and Australian hospitals. She is an examiner for the Australasian College of Physical Scientists and Engineers in Medicine and has been a member of state and national radiation oncology advisory groups. Her qualifications include bachelor's and master's degrees, and she is a registered radiation oncology medical physicist.

## **Dr Pooja Yadav**

Dr Pooja Yadav is an experienced radiation chemist with a demonstrated history of working in the tertiary education sector. She has over 17 years of experience in radiation research at various international universities. She did her PhD in radiation chemistry and, through fellowship work, she gained knowledge of relevant International Atomic Energy Agency safety standards and fundamentals. Her primary area of expertise is pulse radiolysis using linear accelerators, electron spin resonance and Raman spectrometry. Pooja is currently working as radiation safety advisor at the University of Auckland and holds an honorary academic position with the university's School of Chemical Sciences.

## **Sally McMillan**

Sally McMillan is a practising medical imaging technologist in Central Otago and has 40 years of clinical experience. She has significant experience at the managerial level in radiation safety and was the radiation safety officer at Te Whatu Ora – Waikato for a number of years, also serving as a member of their Radiation Safety Committee (expert advisory group). Sally is fluent with the ORS Code of Practice for Diagnostic and Interventional Radiology, ORS C1.

Below are the biographical profiles for the former membership of the Council who presided over the 9th, 10th and 11th Council meetings in 2023.

## **Carl Dawson**

Carl Dawson has a background in electronic and software engineering and is the managing director of Christchurch-based ancillary radiation services provider Radiation Protection Services (RadPro), which supplies personal dosimetry, protection-level instrument calibration, analytical and consultancy services to users of ionising radiation in Aotearoa New Zealand. Before starting RadPro, Carl was based at the national radiation laboratory and supported their operational and regulatory activities.

## **Dr John Laban**

Dr John Laban has worked in the radiation protection industry in Aotearoa New Zealand for 25 years as an advisor, scientist, medical physicist and consultant. Most recently, he has worked as a radiation physics consultant, providing training and consulting services in radiation physics and safety. His education includes a Bachelor of Science with Honours (Physics) degree and a PhD in solid states physics.

## **Karen Coleman**

Karen Coleman has significant experience at the managerial level in radiation safety. She was the director and head of the Department of Radiation Therapy at the University of Otago for 17 years and is currently the radiology manager at Te Whatu Ora – Capital, Coast and Hutt Valley. Karen has held several directorship roles for various governance boards, including president of the New Zealand Institute of Medical Radiation Technology. Her qualifications include a Bachelor of Science with Honours.

## **Dr Andy Cousins**

Dr Andy Cousins has over 20 years' clinical experience working as a radiation oncology medical physicist in the United Kingdom and New Zealand and has further experience in scientific research and consultation. Currently he is the chief radiation oncology physicist at Christchurch Hospital and sits on other national and international radiation oncology advisory groups. His education includes a Bachelor of Science with Honours and a PhD.

# Appendix 2: Table of topics 2022

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| <b>Member</b>   | <b>9<sup>th</sup> Meeting</b><br>(14 February) | <b>10<sup>th</sup> Meeting</b><br>(8 March) | <b>11<sup>th</sup> Meeting</b><br>(29 June) | <b>12<sup>th</sup> Meeting</b><br>(1 November) | <b>13<sup>th</sup> Meeting</b><br>(13 December) |
|-----------------|------------------------------------------------|---------------------------------------------|---------------------------------------------|------------------------------------------------|-------------------------------------------------|
| Brian Lunt      | ✓                                              | ✓                                           | ✓                                           | ✓                                              | ✓                                               |
| Lois Hutchinson | Apol                                           | ✓                                           | ✓                                           | ✓                                              | ✓                                               |
| Carl Dawson     | ✓                                              | ✓                                           | ✓                                           | ×                                              | ×                                               |
| John Laban      | ✓                                              | Apol                                        | ✓                                           | ×                                              | ×                                               |
| Karen Coleman   | ✓                                              | ✓                                           | ✓                                           | ×                                              | ×                                               |
| Andy Cousins    | ✓                                              | Apol                                        | ×                                           | ×                                              | ×                                               |
| Casey Davies    | ×                                              | ×                                           | ×                                           | ✓                                              | ✓                                               |
| Iain Ward       | ×                                              | ×                                           | ×                                           | ✓                                              | ✓                                               |
| Lynne Greig     | ×                                              | ×                                           | ×                                           | ✓                                              | ✓                                               |
| Pooja Yadav     | ×                                              | ×                                           | ×                                           | ✓                                              | ✓                                               |
| Sally McMillan  | ×                                              | ×                                           | ×                                           | ✓                                              | ✓                                               |

✓ Present  
 Apol Apologies  
 × Not a Council member at the time of meeting

# Appendix 3: Table of topics 2022

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| <b>Reference</b><br>File reference<br>for year item<br>activated | <b>Topic</b>                                                                     | <b>Action</b>                                                     | <b>Stage</b><br>As at end of reporting<br>period                     | <b>Closing<br/>action</b> |
|------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------|
| <b>1-22</b>                                                      | NORM in mining                                                                   | Letter to Director<br>(LD#1-22/1)                                 | The Council has<br>received<br>acknowledgement<br>from the Director. |                           |
| <b>2-22</b>                                                      | I-131 treatment of<br>thyrotoxic cats                                            | Recommendation –<br>LOR#2-22/1                                    | The Council has<br>received<br>acknowledgement<br>from the Director. |                           |
| <b>3-22</b>                                                      | Survey meters:<br>Equipment for detecting<br>and measuring ionising<br>radiation | Recommendation –<br>LOR#3-22/1                                    | Under Director<br>consideration.                                     |                           |
| <b>4-22</b>                                                      | Personal dosimetry                                                               | Request for<br>information –<br>Letter to Director<br>(LD#4-22/1) | Under Director<br>consideration.                                     |                           |
| <b>5-22</b>                                                      | Adopting ISO/IEC<br>directives                                                   | Recommendation –<br>LOR#5-22/1                                    | The Council has<br>received<br>acknowledgement<br>from the Director. |                           |

# Appendix 4: Summary of recommendations progressed in 2023

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## *LOR#2-22/1: Radiation safety aspects of iodine-131 treatment of thyrotoxic cats*

### Background

The Council noted that the iodine 131 (I-131) treatment of thyrotoxic cats is increasing in veterinary practices under conditions where there is no longer a specific code of practice covering veterinarian therapeutic use of I-131. This elevates the radiation safety risk where the radiation safety aspects are not well managed.

### Summary of recommendation

The Council recommended the Director appoint a technical committee or expert to publish guidance notes<sup>2</sup> or a code of practice covering the therapeutic use of I-131 in the veterinary setting.

## *LOR # 3-22/1: Equipment for the detection and measurement of ionising radiation (survey meters)*

### Background

The use of equipment for detecting and measuring ionising radiation is a legal requirement under Codes issued under section 86 of the Act. The safe use of such equipment requires specialist knowledge and appropriate guidelines to verify the equipment is suitable for individuals and/or organisations to use. It is generally expected that individuals and/or organisations with responsibility for a radiation source will have access to suitable equipment for detecting and measuring ionising radiation. Specialist guidance is needed to verify that the 'suitable equipment' is fit for its intended purpose.

The Council made three recommendations to the Director to ensure the appropriate level of technical guidance is specified and accessible to minimise the risks of adverse consequences from people using unsuitable equipment.

### Summary of recommendations

1. Where the use of equipment for detecting and measuring ionising radiation is either an explicit or implicit regulatory requirement, the Council recommended ORS set out minimum technical equipment specifications directly or by reference to a suitable standard(s) in either the Codes or as guidance notes.

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<sup>2</sup> As referenced in Ministry of Health. 2020. *Code of Practice for Veterinary Radiation: ORS C9*. Wellington: Ministry of Health. URL: [www.health.govt.nz/publication/code-practice-veterinary-radiation](http://www.health.govt.nz/publication/code-practice-veterinary-radiation) (accessed 2 May 2024).

2. The Council recommended ORS publish an equipment selection guide to help with selecting the most appropriate equipment and the essential characteristics for each use case (fitness for purpose) encountered within the Aotearoa New Zealand context as a guidance note.
3. The Council recommended ORS publish a guide detailing how equipment is to be used to satisfy the associated regulatory requirement. This guide would include acceptable methods for determining the minimum detectable activity for situations where contamination monitoring is undertaken.

#### *LOR# 5-22/1: Adoption of the ISO/IEC Directives in the writing of Codes*

##### Background

The Council has identified that the different Codes are written with some variations in style. This variability in terminology lends itself to inconsistencies in the application and interpretation of the Codes. Using internationally accepted standardised terminology could help when defining technical standards.

##### Summary of recommendation

To mitigate the risk of inconsistent application and interpretation of Codes, the Council recommended the Director adopt *ISO/IEC Directives, Part 2 Principles and rules for the structure and drafting of ISO and IEC documents*,<sup>3</sup> section 7: Verbal forms for expressions of provisions.

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<sup>3</sup> ISO/IEC. 2021. *ISO/IEC Directives, Part 2, Principles and rules for the structure and drafting of ISO and IEC documents, Ninth Edition 2021*. Geneva: International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC). URL: [www.iso.org/sites/directives/current/part2/index.xhtml](http://www.iso.org/sites/directives/current/part2/index.xhtml) (accessed 2 May 2024).