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# RADIATION ADVISORY COUNCIL

# ANNUAL REPORT 2019-20

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NSW Environment Protection Authority
4 Paramatta Square
12 Darcy Street, Paramatta NSW 2150
Locked Bag 5022, Paramatta NSW 2124
Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (NSW only – environment information and publications requests)
TTY users: phone 133 677, then ask for 131 555
Email: info@epa.nsw.gov.au
Website: www.epa.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@epa.nsw.gov.au
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October 2020

The Honourable Matt Kean MP

Minister for Energy and Environment

Dear Minister

It is my pleasure to forward to you for presentation to the Parliament of New South Wales the Annual Report of the Radiation Advisory Council for the period 1 July 2019 to 30 June 2020.

This report is prepared in accordance with the provisions of the *Radiation Control Act 1990*.

Asela Atapattu

**Chairperson, Radiation Advisory Council**

19 October 2020

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# Chairperson's review

The Radiation Advisory Council (the Council) provides advice to the Minister for Energy and Environment and the NSW Environment Protection Authority (EPA) on technical and policy matters in relation to the management of radiation in NSW under the *Radiation Control Act 1990* (the Act) and the Radiation Control Regulation 2013 (the Regulation).

This reporting period saw the 2019 NSW state election bringing significant changes to the 'machinery of government'. The EPA joined the newly created NSW Department of Planning, Industry and Environment on 1 July 2019, underwent a restructure, and relocated to Paramatta in February 2020. On 11 March 2020, the World Health Organization (WHO) declared COVID-19 to be a pandemic. The COVID-19 restrictions that followed led the Council to hold its first online meeting in June 2020.

In this reporting period, the Council also:

- welcomed four newly appointed members – Ms Ingrid Klobasa (deputy; nominee of Ministry of Health), Mr Mark Moskvitch (nominee of the Secretary of DFSI (now Customer Services NSW)), Mr Andrew Niven (expert in work health and safety) and Mr John Stacpoole (expert in mine radiation safety) – and one reappointed member, Mr Brent Rogers (expert in health physics)
- acknowledged the contribution and service of departing members – Mr Andrew Battye (nominee DFSI), Ms Kelly Lovely (expert in work health and safety) and Mr Rob McLaughlin (expert in mine radiation safety).

The Council held five meetings during this period and provided the EPA with policy and regulatory advice on the administration of the Act, considering a wide range of radiation matters. Among its activities, the Council:

- considered national uniformity initiatives and Radiation Health Committee (RHC) recommendations, including enHealth's progress on the implementation of a national plan for radiation protection that includes implementing the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Services (IRRS) Mission to Australia's recommendations
- advised the EPA on temporary exemptions to some radiation licensing requirements due to COVID-19 restrictions. Orders under the Act related to these exemptions were gazetted on 8 May 2020
- received a presentation ('Cave radon exposure, dose dynamics and mitigation') from Dr Chris Waring, Principal Research Scientist, Institute for Environmental research, ANSTO. Following the presentation, the Council requested a paper on the regulation of radon in caves due to the findings presented (i.e. that there is potential for significant exposure of cave guides to radon arising from amendments to ICRP publication 137, which increases the recommended levels of radon exposure and risk)
- reviewed the work of the Council's Course and Competency Committee. This committee had completed its review of 73 radiation-user licensing courses (provided by 46 course providers)
- oversaw the progress of guidelines prepared by two of the Council's committees:
    - *Radiation Guideline 6: Compliance requirements for ionising radiation apparatus used in diagnostic imaging*. This was released for public comment in December 2019
    - *Radiation Guideline 7*. Council endorsed minor amendments to the guideline and noted that the EPA had commenced a cost-benefit analysis on the implementation of the guideline
- considered the EPA radiation compliance activities
- toured the radiation facilities of ANSTO (the Australian Nuclear Science and Technology Organisation) and Cyclotek Pty Ltd. This gave Council members, who have diverse professional backgrounds, an opportunity to see and learn about radiation activities outside their own areas of expertise.

During the reporting year, the Council also provided advice to the EPA on radiation matters that included:

- radiation licensing (user and management licences)
- assessment of radiation safety courses for licensing and accreditation purposes
- accreditation of consulting radiation experts (CREs) and radiation security assessors (persons accredited by the EPA to carry out certain activities under section 12 and 13 of the Regulation)
- review of radiation accidents and incidents, including an analysis of 2018–19 accidents.

The Council's work continues to focus on the objectives of its 2016–19 strategic direction:

- developing uniform regulatory initiatives through the National Directory for Radiation Protection (NDRP)
- reviewing and providing advice to the Minister on amendments to the Act and the remake of the Regulation
- identifying and addressing emerging issues in radiation protection, such as new technology
- identifying procedures and requirements to prevent or minimise dangers arising from the misuse of radiation sources, specifically influencing better reporting of radiation accidents through education, emphasising responsiveness and prevention.

In the year ahead, the Council's work will focus primarily on:

- reviewing and contributing to national codes and standards in the NDRP, the RHC and enHealth initiatives
- the review of the Act and proposed remake of the Regulation
- providing advice to the EPA on licensing, accreditation, safety courses, and radiation accidents
- developing and implementing an accreditation system for CREs who assess shielding requirements set out in *Guideline 7: Radiation shielding design assessment and verification requirements*
- overseeing the implementation of *Radiation Guideline 6: Compliance requirements for ionising radiation apparatus used in diagnostic imaging*
- reviewing the work of the Council's committees.

I would like to acknowledge the commitment and contribution of members of the Council, and of the EPA staff who support the Council.

Asela Atapattu

**Chairperson**

**Radiation Advisory Council**

# Responsibilities of the Council

The Radiation Advisory Council is established under section 29 of the *Radiation Control Act 1990* (the Act). The Act and the Radiation Control Regulation 2013 (the Regulation) are administered by the Minister for Energy and Environment through the NSW Environment Protection Authority (EPA).

Appendix 1 outlines the objects of the Act.

# Annual report

Section 33(1) of the Act requires that 'as soon as practicable after 30 June (but on or before 31 December) in each year, the Council is to prepare and forward to the Minister a report of its work and activities for the 12 months ending on 30 June in that year'.

# Composition of the Council

The Council consists of 17 members appointed by the Minister outlined in Appendix 2.

# Functions of the Council

Section 30 of the Act prescribes the functions of the Council, namely:

1. The Council is to advise the Minister on:
    a. proposed amendments to this Act and the making, amendment or repeal of regulations under this Act
    b. the administration of this Act and the regulations
    c. measures to prevent or minimise the dangers arising from radiation
    d. the granting of exemptions authorised by the regulations for periods exceeding 60 days, and
    e. such other matters relating to radiation safety as the Minister considers appropriate.
2. Any such advice may be given either at the request of the Minister or without any such request.
    a. The Council may at any time, and must on the request of the Authority, provide advice to the Authority about licences and accreditations under Part 2 of the Act.
    b. The advice provided to the Authority may be general or specific, as the circumstances require.
3. The Council has such other functions as are conferred or imposed on it by or under this or any other Act.

The EPA exercises responsibilities and powers under the Act and staff of the EPA Environmental Solutions (Radiation) provide secretariat support to the Council.

# Meetings of the Council

During the reporting period ending 30 June 2020, the Council met five times. Appendix 3 shows the attendances of members at meetings.

# MoU between the EPA and the Council

The Memorandum of Understanding (MoU) between the EPA and the Council is usually reviewed every three years. The latest MoU was signed by both parties on 30 June 2016 and is provided in Appendix 4. During the 2019–20 reporting period, the Council and the EPA commenced review of the MoU.

# Strategic direction

In 2019–20 the Council decided to establish a working group to:

- review the Council's strategic direction, taking into account the Draft NSW Radiation Protection Roadmap 2020–26
- provide the draft of a new strategic direction to the Council in 2020–21.

Until this review is complete, the Council will continue to focus on the objectives of its strategic direction 2016–19, namely:

- developing uniform regulatory initiatives through the National Directory for Radiation Protection (NDRP)
- reviewing and providing advice to the Minister on amendments to the Act and a remake of the Regulation
- identifying and addressing emerging issues in radiation protection, such as new technology
- identifying procedures and requirements to prevent or minimise dangers arising from the misuse of radiation sources, specifically influencing better reporting of radiation accidents through education, emphasising responsiveness and prevention.

# The Council's work

## National uniformity

In August 1999, the Australian Health Ministers' Conference (AHMC) agreed to develop the National Directory for Radiation Protection (NDRP), to promote national uniformity in radiation protection through each jurisdiction's radiation protection framework.

The Radiation Health Committee (RHC) is responsible for the development of codes and standards for radiation protection in Australia for inclusion in the NDRP.

The EPA represents NSW on the RHC. The RHC's role is to advise the CEO of Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the Radiation Health and Safety Advisory Council on matters relating to radiation protection, including formulating draft national policies, codes and standards for consideration by the Commonwealth, states and territories.

The Radiation Advisory Council contributes to the development of codes and standards and other RHC policy documents by commenting on drafts and advising the NSW representative on the RHC.

## Radiation Health Expert Reference Panel (RHERP) and enHealth

In 2019 the Standing Committee on Environmental Health (enHealth), a committee of the Australian Health Protection Principal Committee (AHPPC), established the Radiation Health Expert Reference Panel (RHERP) to advise enHealth, the AHPPC and COAG Health Council on radiation health-related matters.

EnHealth, supported by the RHERP, is overseeing the implementation of the IAEA IRRS Mission's recommendations.

The EPA represents NSW on the RHERP, alongside other state and territory radiation regulators.

The Radiation Advisory Council provides advice to the NSW representative on RHERP as required.

### National strategy for radiation protection in Australia

During 2019–20 the Council was consulted on, and informed about, enHealth and RHERP work, specifically:

- an enHealth workshop held in August 2019. This focussed on developing a national strategy for the regulation of radiation protection in Australia. The NSW EPA was represented at this workshop by the Council Chair and other EPA officers
- a workplan, developed by RHERP for approval by enHealth, to address the recommendations of the IAEA IRRS Mission to Australia. The workplan proposes a number of projects, including:
    - developing a national strategy for radiation protection
    - establishing a new intergovernmental agreement
    - improving use of the Australian Radiation Incident Register (ARIR)
    - harmonising competencies and authorisation requirements across Australian jurisdictions
    - improving adoption of the safe transport code
    - harmonising clearance levels and dosimetry standards
    - addressing IAEA Code of Conduct issues, compliance and the regulatory workforce.

# Radiation Health Committee

During 2019–20 the Council was consulted on the RHC work program and informed of outcomes of RHC meetings held in July 2019, November 2019 and March 2020.

## Key issues arising from RHC work

### IAEA IRRS Mission Action Plan

See *National strategy for radiation protection in Australia*, above.

### National Directory for Radiation Protection Edition 2 (NDRP2)

RHC agreed on an updated draft of the NDRP2 incorporating recommendations of the IRRS Mission report and *RPS C-5 Code for Radiation Protection in Medical Exposure*. Approval of NDRP2 is being considered by the COAG Health Council (Ministers). An RHC working group has also been established to develop a regulatory expectations document to complement RPS C-5.

### Australian National Radiation Dose Register (ANRDR)

The long-term vision for the ANRDR is to provide the storage and maintenance of dose records for all occupationally exposed workers in Australia. RHC approved the terms of reference for the ANRDR advisory board. An RHC working group is developing a national approach to accrediting dosimetry service providers.

### Radiation Protection Standards for Maximum Exposure Levels to Radiofrequency Fields (RPS 3)

Council was briefed on progress in the development of an updated standard for radio-frequency radiation exposure.

### New dose limits for young workers

*RPS C-1 The Code for Radiation Protection in Planned Exposure Situations* has been amended to address the IRRS recommendation relating to radiation dose limits for occupationally exposed persons aged 16–18.

### Code of Practice for Exposure of Humans for Research (RPS 8)

RHC was given a presentation from the Victorian Working Group of Physicists and Ethics and Governance Managers Ethics Committee's reviewing the interpretation of RPS 8 across Australia. NSW adopts this Code directly in the Regulation (cl. 33). Council provided comments to the EPA on the interpretation of RPS8.

### National Radon Action Plan

ARPANSA is developing a Radon Action Plan for Australia. The plan is intended to provide an overarching vision and direction for radon protection in Australia, align priorities with national and international obligations, and present a long-term strategy for protecting people from exposure to radon and radon progeny in homes and workplaces.

## Review of national and international documents

During 2019–20 the Council considered the following documents.

### ARPANSA – Non-Ionising Radiation Protection in Australia, Technical Report 182 (November 2019)

The Council reviewed the document, provided comment, and suggested that relevant professional bodies be consulted further.

### IAEA Radiation Safety Standard Committee (RASSC) – No Immediate Change Needed in IAEA Radon Protection Recommendations (21 November 2019)

The IAEA has made no immediate changes to its radon protection recommendations; the Council agreed that the EPA should consider reviewing the implications of this and asked the EPA to provide a paper in 2020–21 about the regulation of workers exposed to radon in caves.(See *Radiation management licenses – Council's advice to the EPA*.)

### The National Health and Medical Research Council (NHMRC) – revision of Australian Drinking Water Guidelines

The Council provided comment on the radiological chapters, which had been revised to reflect:

- changes in international best practice in radiation protection and measurement methodology
- the Australian context for considering radionuclides in drinking water.

A key issue is the justification of a proposed reduction in dose constraint from 0.5mSv/y to 0.3 mSv/y.

**RPS 4 Recommendations for the Discharge of Patients Undergoing Treatment with Radioactive Substances (2002)**

The Council agreed to consider this item once the EPA had sought legal advice on increasing or reviewing iodine-131 patient discharge limits. The EPA agreed to provide a paper to the Council at the next meeting.

The Council also considered the following articles:

- ANSTO media release 13th September 2019: *Nuclear Medicine Production at ANSTO*
- *ABC News* item 24 June 2019: 'Lucas Heights nuclear medicine production halts after workers exposed to unsafe radiation'
- *Journal of Radiological Protection* 4 June 2019: 'Guidance on prevention of unintended and accidental radiation exposures in nuclear medicine'
- NSW Local Health Districts Network: *Safety Information 001/20 – Use of linen in radiological procedures: potential artefact*
- *Sydney Morning Herald* (online) 29 May 2020: 'Tatt's it: zombie woman and the lotus flowers are going, going, gone' [article on laser removal of tattoos]

# Radiation Control Act 1990 and Regulation

During the reporting period the Council was kept informed of the current status on the Act and the remake of the Regulation.

## Orders under the Radiation Control Act due to COVID-19

During 2019–20 the EPA asked the Council to provide advice on licensing matters related to COVID-19 restrictions. That advice led to the following Orders under section 38A of the Act, published in the NSW Government Gazette No. 95 of 8 May 2020.

- Exemptions from licensing for persons on the Australian Health Practitioner Regulation Agency (AHPRA) pandemic response sub-register to enable persons listed on the register to return to the workforce to meet the increased need during the COVID-19 pandemic. This Order takes effect from the date it is published in the Gazette and has effect until 6 April 2021, unless otherwise varied or revoked under s 38A (7) of the Act.
- Exemption from certification for diagnostic imaging apparatus to reduce the potential health risks associated with the COVID-19 pandemic to consulting radiation experts (CREs) who are required to attend inspections on-site, and to reduce pressure on the delivery of medical services such as diagnostic imaging. This Order takes effect from the date it is published in the Gazette and has effect for 24 months, unless otherwise varied or revoked under s 38A (7) of the Act.
- Exemption from on-site supervision requirements for the purpose of providing temporary relief from the requirement of nuclear medicine physicians to be on-site for diagnostic procedures while the COVID-19 pandemic is being managed. This Order takes effect from the date it is published in the Gazette and has effect for 12 months, unless otherwise varied or revoked under s 38A (7) of the Act.

## EPA radiation compliance

During the reporting period the EPA carried out the following regulatory activities.

**Prosecution of Gammasonics Institute**

The EPA initiated a prosecution of Gammasonics Institute for Medical Research Pty Ltd in the Land and Environment Court for the transport of a security enhanced radioactive source without complying with the requirements of sections 14(1) and 14(6) of the Act and clause 36 of the Regulation that relate to safe transport and security. Gammasonics pleaded guilty to the three charges and was fined $132,000 and required to pay the EPA's legal costs.

### Health Education and Training Institute (HETI)

The EPA presented on NSW legislative requirements and framework at HETI event. Several Council members participated.

### Fire and Rescue NSW training

The EPA supported radiation response training.

## Council offsite visit to ANSTO

On 18 October 2019, the Council visited the ANSTO OPAL reactor and waste repository, and the Cyclotek Pty Ltd dual cyclotron, both located at the ANSTO Lucas Heights site. The Council found the visit very informative, providing members (who have diverse professional backgrounds) an opportunity to learn about radiation activities outside their own areas of expertise.

## Council advice to the EPA on other radiation matters

During the reporting period, the Council continued to provide advice to the EPA in relation to routine radiation matters, including:

- licensing matters and non-standard licence applications (see *Licensing and accreditation*)
- radiation safety courses for the purposes of radiation user licensing (see *Committees of the Council – Course and Competency Committee*)
- accreditation matters and non-standard accreditation applications (see *Licensing and accreditation*)
- radiation accidents and incidents (see *Radiation accidents*).

# Committees of the Council

Under section 31 of the Act, the Council can establish committees to help it perform its functions. In 2019–20, the Council had the following committees:

- Course and Competency Committee
- *Guideline 3 Recommendations for minimum standards and safety requirements for fixed radiation gauges (sealed source devices)* Review Committee
- *Guideline 6 Registration requirements and industry best practice for ionising radiation apparatus used in diagnostic imaging* Review Committee
- Review of Use of Cosmetic Lasers and Intense Pulsed Light Devices Committee
- Shielding Assessment and Verification Committee (including review of Guideline 7)

The roles and work of each of the Council's committees are outlined below. Members are listed in Appendix 5.

## Course and Competency Committee

In October 2017 the Council re-established the Course and Competency Committee (CCC) to undertake a periodical review of all radiation safety courses approved by the EPA for licensing radiation users.

The Council endorsed the CCC membership and terms of reference. The CCC is to carry out this work by:

- providing advice to the Council on proposed licensing requirements, specifically to review or determine generic attributes and competencies for each licence condition
- reviewing generic advice provided to course providers

- reviewing and recommending to the Council courses for approval, or for modification within the parameters endorsed by the Council
- advising the Council on the frequency of future reviews
- making recommendations to Council of its own accord on emerging issues, technical developments, regulatory matters or policy development relating to the suitability of, or necessity for, approved courses.

In 2017–18 the Council endorsed the CCC's:

- methodology for assessing courses for radiation user licensing
- revised generic advice to course providers
- recommendation that 12 courses reviewed of the 70 submitted be approved.

In 2018–19 the Council endorsed:

- that 50 courses be approved as recommended by the CCC
- the CCC recommendation that courses used for licensing purposes be reviewed every five years.

During 2019–20 the CCC met once, and completed its review of courses and its work under its terms of reference.

During this period the Council:

- endorsed the CCC recommendation that 11 courses be approved
- noted the CCC's advice on the review of RHC competencies for the purposes of licensing purposes. The CCC advised Council that it may be possible to adapt some element of the national RHC competencies for licensing purposes, however, there are significant gaps when assessing RHC competencies against the array of NSW radiation user licences. The CCC advice was provided to the ARPANSA
- noted that the CCC had reviewed ARPANSA *Radiation Protection of Medical Personnel and Radiation of the Patient* modules, recommending minor amendment
- noted that the CCC had completed its review of courses, and agreed that future courses submitted to the EPA would be considered by the Council's CCC expert member before they were submitted to the Council.

The Council thanked CCC members for their time and contribution and noted that during the review it had approved a total of 73 courses across 46 providers.

## Guideline 3 Review Committee

The Council at its December 2016 meeting established the Guideline 3 Review Committee to review *Guideline 3: Recommendations for minimum standards and safety requirements for fixed radiation gauges (sealed source devices)*, initially developed by the Council. The Council endorsed the committee's terms of reference at its February 2017 meeting. The committee was tasked with:

- reviewing the existing guideline requirements
- identifying and determining content of the guideline
- consulting with CREs and stakeholders
- reviewing all relevant codes and standards
- submitting a draft revised guideline for the Council's consideration.

During 2017–18, the committee started to review of *Guideline 3*, and the Council endorsed the committee's recommendation that the guideline include all sealed source devices (SSDs) for industrial applications.

During 2018–19, the committee continued work on a revised draft *Guideline 3,* and informed the Council that it intended to provide the draft guideline, competencies for CREs, and CRE training material to the Council in the next period.

The committee did not meet during 2019–20. The EPA informed the Council that the committee's work had not progressed, because of changes within the EPA and priorities associated with the COVID-19 pandemic.

## Guideline 6 Review Committee

In 2013, the Council established the Guideline 6 Committee to review Radiation Guideline 6: Registration requirements and industry best practice for ionising radiation apparatus used in diagnostic imaging (2004). The guideline needed to be updated to take account of new technology and have its requirements aligned with the Act.

The committee finished the review in 2015–16 and the council endorsed it for the EPA to progress.

The revised guideline, Radiation Guideline 6: Compliance requirements for ionising radiation apparatus used in diagnostic imaging[1], has six parts:

1. Mammography
2. Radiography (medical) and bone mineral densitometry
3. Dentistry (including maxillofacial)
4. Fluoroscopy
5. Computed tomography
6. Veterinary science (radiography and fluoroscopy).

The revised guideline requires CREs to carry out new kinds of assessments. In 2016–17 the committee, in conjunction with the EPA and key stakeholders, considered the extra training CREs would need, and endorsed the EPA seminar to upskill CREs.

The Guideline 6 Committee did not meet during 2017–18; the Council continued to oversee the upskilling of CREs. In 2018–19 the EPA informed the Council that it had halted the progress of the guideline until a cost-benefit analysis was done on implementing the draft guideline.

In 2019–20 the Council:

- endorsed amendment to the guideline for fluoroscopy, and for radiography requirements for fluoroscopy high-level boost mode, as recommended by the committee
- noted that the EPA had undertaken a cost-benefit analysis and had released the guideline to targeted stakeholders for comment, with close-off for comments on 19 June 2020. The EPA indicated that the guideline would be implemented in the next period unless there were any significant amendments arising from the feedback.

## Committee to Review the Use of Cosmetic Lasers and IPLs

In June 2019 the Council agreed to establish a working group to consider the management of the cosmetic use of lasers and intense pulsed light devices (IPLs) in NSW. The Council did not start work on the committee's term of reference and membership in 2019–20 because of changes within the EPA and priorities associated with the COVID-19 pandemic.

## Shielding Assessment and Verification Committee

In August 2017, at the EPA's request, the Council reconvened the Shielding Assessment and Verification Committee (SAVC). This was to progress the accreditation of CREs to certify that premises storing or using regulated material comply with shielding requirements (which are given in Radiation Guideline 7:

[1] www.epa.nsw.gov.au/radiation/radiationpubs.htm

Radiation shielding design assessment and verification requirements[2]). The SAVC drafted *Radiation Guideline 7* in 2009; in 2010, the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) agreed to provide training and develop a program to accredit CREs in shielding for medical premises, but because of administrative changes in the ACPSEM, this program did not go ahead.

The SAVC is carrying out its task by:

- reviewing *Radiation Guideline 7: Radiation shielding design assessment and verification requirements*
- reviewing CRE competencies and developing assessments for accrediting CREs (in premises shielding)
- reviewing licensing and accreditation conditions
- assessing CRE applications to be accredited in premises shielding.

During 2017–18 the committee met six times and finalised its review of *Guideline 7* and the competencies for the accreditation of CREs who assess shielding in NSW premises. (The competencies are self-assessment templates for low-risk premises, and CRE test requirements.). The Council endorsed these documents at its June 2018 meeting.

In the 2018–19 period, the EPA advised the Council that it had halted progress on *Guideline 7* until another document – EPA guidance for introducing guidelines – had been approved (within the EPA), and a cost-benefit analysis on implementing *Guideline 7* had been done.

During 2019–20 the Council:

- reviewed and endorsed advice from the SAVC to include extra information in *Guideline 7* about wall-shielding requirements. The Council passed its recommendation to the EPA, which amended the draft guideline
- reviewed the new EPA guidance for introducing radiation regulatory documents, noting that guidelines would now be developed and implemented in accord with this
- was advised that the EPA had engaged a consultant to undertake a cost-benefit analysis on the implementation of the draft guideline, and that it intended to release the guideline for public comment in the next period.

# Licensing and accreditation

Under Part 2 of the Act, the EPA is the authority responsible for administering:

- radiation user licences
- radiation management licences
- accreditation of consulting radiation experts
- accreditation of radiation security assessors.

Under section 30 of the Act, the Council may give generic or specific advice to the EPA on applications. The EPA considers the council's standing advice for all applications submitted to it under the Act. The Council and the EPA work together on determining the outcomes of applications, as set out in the MoU between the Council and the EPA (see Appendix 4).

During 2019-20, the council:

- provided specific advice on licensing and accreditation matters (see below Council's advice to the EPA)

[2] https://www.epa.nsw.gov.au/your-environment/radiation/publications-and-consultation-docs

- participated in, and provided feedback on, an EPA radiation licensing survey emailed to the regulated community to establish baseline measures required to assess a key performance indicator:

  Radiation 1: An increase in practitioner awareness of safe radiation principles, above an established baseline, in three representative sectors (Health, Industrial, Research) of the regulated community
- at each of its meetings, reviewed licensing and accreditation statistics reports provided by the EPA.

# Radiation user licences

Under Section 7 of the Act, a natural person who intends to use regulated material is required to hold a radiation user licence and comply with any conditions the licence is subject to.

'Regulated material' means any of the following:

- radioactive substances
- ionising radiation apparatus
- non-ionising radiation apparatus of a kind prescribed by the regulations
- sealed source devices.

## Purposes of a radiation user licence

The purposes of a radiation user licence are to:

- regulate, restrict or prohibit the use of regulated material
- ensure that those who use regulated material:
  - are fit and proper persons
  - have appropriate knowledge of the principles and practices of radiation safety and protection applicable to the activities proposed to be carried out
- protect the NSW community and the environment from harmful exposure to radiation through the application of conditions of licence that restrict how, when and where radiation may be used

## Occupations requiring a radiation user licence

Radiation user licences are held by individuals working in a wide range of occupations, such as scientists, medical specialists, nurses, radiographers, industrial radiographers, service engineers, technologists, dentists, chiropractors, veterinarians and tertiary lecturers.

## Number of radiation user licences issued by the EPA

During the reporting period ending 30 June 2020, the Council noted that the EPA:

- issued 2,434 radiation user licences
- renewed 6,726 user licences.

At the end of the reporting period, the EPA was administering a total of 16,188 active radiation user licences (5,328 one-year licences and 10,860 three-year licences).

## Council's advice to the EPA

During 2019–20, the Council provided the EPA with specific advice regarding radiation safety and licensing requirements for a wide range of occupational areas that use radiation.

### Non-standard user licence applications

The Council reviewed and endorsed 13 non-standard user licence applications.

### Radiation user licence criteria and conditions

The council:

- endorsed an amendment to the IA42 licence to use radiation apparatus for human imaging for security screening. This was requested by Correctional Services because social-distancing requirements under the COVID-19 pandemic restrict pat-and-strip searches of prison inmates. The Council recommended that the IA42 user licence condition be amended so that it only applies to prison inmates and that Correctional Services provide annual reporting data on the operation of the whole-body X-ray scanners used for security purposes that are listed on its radiation management licence. The report is to include data on the number of scans performed and a breakdown of the total doses that the inmates have received over the year, so that the Council and the EPA can monitor the cumulative dose
- considered the proposal to remove the Council's activity threshold limits for an S7 licence, which allows radioactive substances to be used for industrial gauging. The Council agreed that the licensing activity thresholds could all be increased, and asked that the EPA provide Council with a paper in the next period, once relevant expert members had been consulted
- endorsed an amendment to the criteria for the IA23S licence to use radiation apparatus for veterinary purposes under supervision, by including the words 'eligible for inclusion on Royal College of Veterinary Surgeons Register'.

### Radiation licensing matters

In 2018–19, the Council had considered whether all occupationally exposed nurses and theatre staff should be issued with personal radiation monitoring devices (PMDs). It had recommended that PMDs should apply only to theatre staff who are directly involved with the use of ionising radiation (for example the surgeon, scrub nurse or anaesthetist); theatre staff who do not directly assist the person carrying out the procedures are not involved in the use of ionising radiation, and do not have to be provided with a PMD. However, the Council had also advised that if an employer is in doubt about whether other staff working in theatres should be provided with PMDs, then it should undertake a risk assessment to ascertain the need.

In 2019–20, the Council recommended that these decisions be communicated more broadly, and requested that the advice be provided to the NSW Hospital and University Radiation Safety Officers Group (HURSOG). The EPA attended the HURSOG meeting on 23 August 2020 and communicated the Council's recommendations. The EPA also included this advice on its radiation user licence webpage.

# Radiation management licences

## Requirement for management licences

Under section 6 of the Act, persons responsible for regulated material are required to hold a radiation management licence and comply with its conditions.

The EPA issues two types of management licences:

- a licence (valid for one year) that allows its holder to own, store, give away, sell and possess regulated material
- a licence (valid for either one or three years) that allows its holder only to sell regulated material.

## Persons responsible for regulated material

Section 6 of the Act defines 'persons responsible for regulated material' and means a person who owns, stores, sells or gives away or is in possession of regulated material. This does not apply to people who hold a user licence for the purposes of using regulated material, or to a person transporting regulated material.

## Purposes of management licences

The purposes of radiation management licences are to regulate, restrict or prohibit the possession, sale, storage, giving away and disposal of regulated material. This is to protect people and the environment from unnecessary exposure to radiation.

## Number of radiation management licences issued by the EPA

During the reporting period ending 30 June 2020, the Council was advised that in 2019–20 the EPA issued:

- 385 general management licences
- 8 sell-only management licences.

At the end of the reporting period, the EPA was administering 2,681 active management licences (2,571 general and 110 sell-only).

## Council's advice to the EPA

In the previous period, the Council had asked the EPA to provide it with advice on changes taking place to how the risk of exposure to radon was measured and assessed; how cave guides were monitored; levels of radon in caves; and requirements for radiation management plans. The matter had arisen because the ICRP publication 137 had recently been amended, indicating an increased risk associated with exposure to radon. The EPA had subsequently met with the Jenolan Caves Reserve Trust to discuss the exposure to radon of staff working in caves.

During 2019–20, the Council received a presentation, 'Cave radon exposure, dose dynamics and mitigation', by Dr Chris Waring, Principal Research Scientist, Institute for Environmental Research, ANSTO. The presentation highlighted that cave guides have potential significant exposure to radon: this finding prompted the Council to ask the EPA to prepare a paper on the topic, in consultation with the Council's expert members. The EPA informed the Council that it will revisit this matter once a national position has been established through ARPANSA and the RHC.

In 2019–20, the Council also:

- considered Liverpool Hospital's annual report on the operation of its cyclotron in 2018–19
- considered Royal Prince Alfred Hospital's 2019 annual report on the operation of its cyclotron and ancillary facilities
- considered Cyclotek Pty Ltd's annual report (April 2019–March 2020) on the operation of its cyclotron and ancillary facilities
- considered additional information from Cyclotek Pty Ltd, requested by the Council in the previous period, regarding Cyclotek's quarterly operational report (January 2019 to March 2019).

# Consulting radiation experts

## Accreditation and activities of consulting radiation experts

Section 8(1) of the Act provides for the accreditation of consulting radiation experts (CREs). The Regulation sets out the activities of a CRE, which include:

- advising on the design of premises, in relation to radiation safety requirements, on which regulated material is kept or used, for the purposes of certifying compliance with any conditions imposed on a radiation management licence
- assessing plans for premises on which regulated material is kept or used, for the purposes of certifying compliance with any conditions imposed on a radiation management licence
- assessing any regulated material and the premises at which it is kept or used, for the purposes of certifying compliance with any conditions imposed on a radiation management licence

- assessing the integrity of any shielding of premises at which any regulated material is kept or used, for the purposes of certifying compliance with any conditions imposed on a radiation management licence.

### Purpose of accrediting consulting radiation experts

The EPA accredits CREs to assess apparatus and/or premises and issue a certificate of compliance verifying that regulated material complies with the requirements of licensing.

### Council's advice to the EPA

Under section 9A of the Act, the EPA may seek the Council's advice on accreditation matters.

During the reporting period ending 30 June 2020 the Council:

- refused an application for CRE accreditation in the category of industrial radiography until the applicant had passed the assessment requirements
- approved three applications for accreditation, subject to the applicant undergoing an independent assessment by a CRE who can confirm the applicant is competent in assessing diagnostic radiography equipment under Guideline 6 in the category of:
  - 1 x diagnostic radiography
  - 2 x diagnostic imaging dental.

  All three applicants were assessed as suitable and issued their accreditations
- raised the issue of ensuring that CREs engaged to independently assess applicants for competency are appropriately qualified. The Council recommended that, until the EPA develops other criteria, the only CREs who hold relevant Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) accreditation should assess applicants.

### Number of CREs accredited by the EPA

At 30 June 2020, 104 CREs held active accreditation from the EPA.

## Radiation security assessors

### Accreditation and activities of radiation security assessors

Section 8(2) of the Act provides for the accreditation of radiation security assessors. The activities of a radiation security assessor, as prescribed in clause 13 of the Regulation, are:

- reviewing security plans or amended security plans to assess whether the plans are made or amended in accordance with the Act
- endorsing security plans so that the plan, or the plan as amended, satisfies the requirements of the Act.

### Purpose of accrediting radiation security assessors

The purpose of accrediting radiation security assessors is to ensure that those responsible for security-enhanced sources prepare source security plans and source transport security plans in accordance with the requirement of the Act. A sealed radioactive source (or an aggregation of sealed radioactive sources) that is a Category 1, 2 or 3 is a 'security-enhanced source' for the purposes of the Act

### Number of radiation security assessors accredited by the EPA

At 30 June 2020, four radiation security assessors held active accreditation from the EPA.

## Summary of licences and accreditations issued by the EPA

Table 1 summarises the radiation licences and accreditations issued by the EPA that were active at 30 June 2020.

**Table 1 Active licences and accreditations at 30 June 2020**

| Category | Number |
|---|---|
| Licence to use regulated material | 16,188 |
| Management licences (general) | 2,571 |
| Management licences (sell only) | 110 |
| Accredited consulting radiation experts | 104 |
| Accredited radiation security assessors | 4 |
| Total radiation licences and accreditations | 18,977 |

# Radiation accidents

## Mandatory requirement to report radiation accidents

Clauses 38 and 39 of the Regulation outline the mandatory requirements imposed on persons responsible for regulated material for the reporting and recording of radiation accidents. Clause 37 of the Regulation outlines the types of incidents classified as radiation accidents.

## Causes of radiation accidents

Accidents usually involve many contributing factors. Many accidents or incidents would not have occurred if one of the contributing factors had been prevented. Factors include deficiencies in management systems, a failure to implement controls effectively, communication errors and equipment failure.

Effective safety leadership, combined with understanding the causes of incidents, continuously improving risk controls, and sharing improvements and lessons learned, can prevent incidents from occurring.

## Serious accidents reported to the Health Care Complaints Commission (HCCC)

The EPA has standing advice from the Council that all matters considered serious health-related accidents be reported to the HCCC. During 2019–20 the Council did not refer any accidents to the HCCC.

## Australian Radiation Incident Register

All accidents reported to the EPA, and subsequently to the Council, are reported to ARPANSA by the EPA for inclusion in the Australian Radiation Incident Register (ARIR). The register is intended to raise awareness of radiation safety and to facilitate the sharing of lessons learnt from radiation incidents across Australia.

## Number of accidents reported to the EPA

During the reporting period ending 30 June 2020, the EPA received, and forwarded to the Council to consider, reports of 131 accidents:

- 85 instances involving 92 people where accidents involved doses of over 1 millisievert (mSv), summarised in Table 2
- 46 instances involving 46 people where accidents involved doses of less than 1 mSv, summarised in Table 4.

## Council's advice to the EPA

During this reporting period the Council considered each accident report and where appropriate made recommendations that in its opinion would reduce the risk of a recurrence.

The Council may recommend specific regulatory action be taken where investigations reveal that accidents have been caused by a deficiency in the management system, or recommend the development and implementation of new procedures or counselling or further training, if not already in place, to reduce the risk of this type of incident from happening again.

In June 2019 the Council asked the EPA to provide a summary of radiation accidents reported in 2018–19, to track trends in the causes of accidents and in their reporting. In October 2019 the EPA gave a presentation to the Council on its analysis of accidents reported in 2018–19, which included data from the ARIR. The report highlighted common causes of radiation accidents – knowledge that can inform strategies for accident prevention and be used to improve the reporting process.

The Council noted that the data provided for NSW reflects what is being reported across Australia. The Council acknowledged that the report was very comprehensive, and recommended some changes to the reporting form that would improve the capture of certain accidents and provide clarity to those reporting. The Council also suggested that the EPA consider presenting the accident analysis report at relevant forums. The EPA did present these findings to a wider audience in February 2020, at the Better Value Imaging Forum, a conference run by the Agency for Clinical Innovation Radiology Network that brings together expert advisors from across the medical imaging fields to collaborate and improve on healthcare practices. In attendance were Radiologists, Chief Radiographers, Chief Nuclear Medicine Technologists and Medical Imaging Nurse Unit Managers from public and private hospitals. Also present were representatives from the Ministry of Health, enHealth and professional associations: Australasian Association of Nuclear Medicine Specialists (AANMS), Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM), Australian and New Zealand Society of Nuclear Medicine (ANZSNM), Australian Society of Medical Imaging and Radiation Therapy (ASMIRT), Australian Society of Ultrasound in Medicine (ASUM), and The Royal Australian and New Zealand College of Radiologists (RANZCR).

During this reporting period the Council also:

- requested that the EPA liaise with the NSW Resources Regulator to formalise a process of reporting accidents in the mining industry
- reviewed the International Nuclear and Radiological Event Scale (INES) incident in Switzerland – eye contamination with a Ga-69 droplet
- requested clarification on the definition of a radiation accident involving repeat CT scans arising from extravasation issues. The EPA advised that repeat CT scans in these cases are reportable accidents and agreed to provide information to stakeholders on 'what is a reportable accident'
- continued to emphasise the importance of accidents being reported, even if the radiation dose received has been found to be negligible. The knowledge gained from the reporting of accidents is vital in developing processes and procedures that will reduce the risk of similar accidents reoccurring.

# Summary of radiation accidents considered by the Council in 2019–20

In 2019–20, 130 accidents were presented to the Council for comment – a decrease on the 162 the Council reviewed in 2018–19.

The fall seems to be due to fewer minor accidents (< 1 mSv) being reported in the first half of 2020. Why this happened is unclear: it may have been due to the COVID-19 restrictions (lockdown) reducing non-essential services.

As in previous years, most accidents reported in 2019–20 involved medical imaging procedures (nuclear medicine and diagnostic radiology). The leading cause of these accidents was human error: commonly, requests or patient notes were not followed, or were interpreted incorrectly, resulting in unplanned exposures, incorrect treatments and misidentifications (the wrong patients being treated). Equipment malfunctions accounted for just over a quarter of the reported accidents.

Preventative strategies remain focused on raising the situational awareness of radiation workers. For medical imaging procedures, this includes emphasising timeout protocols to ensure the procedure is applied to the correct patient, at the correct site and with the correct procedure.

Table 2 summarises the causes of accidents, **greater than 1 mSv,** that were reported to the EPA and reviewed by the Council in 2019–20.

**Table 2 Summary of causes of radiation accidents (> 1 mSv) reported in 2019–20, by accident category and type**

| Type of accident | Nuclear medicine | Therapy | Radiology | Other | Total |
|---|---|---|---|---|---|
| Patient notes/plans/requests not interpreted/read/checked correctly | 4 | 1 | 6 | 0 | 11 |
| Incorrect isotope selected and drawn up | 6 | - | - | - | 6 |
| Incorrect isotope drawn up by supplier | 1 | 0 | 0 | 0 | 1 |
| Equipment/software failure | 17 | 0 | 5 | 0 | 22 |
| Booking/request error: Incorrect procedure requested for the right patient | 1 | 0 | 0 | 0 | 1 |
| Booking/request error: Failure to cancel booking | 0 | 0 | 0 | 0 | 0 |
| Booking/request error: Booking request not amended with new scan requested | 0 | 0 | 0 | 0 | 0 |
| Booking/request error: Same examination repeated | 2 | 0 | 1 | 0 | 3 |
| Booking/request error: Wrong patient name entered on request form | 1 | 0 | 3 | 0 | 4 |
| Radiopharmaceutical not administered correctly (injection into cannula) | 9 | 0 | 0 | 0 | 9 |
| Operator error (CTs, PET/CT) | 2 | 4 | 3 | 0 | 9 |
| Physiology (failure of radiopharmaceutical) | 0 | 0 | 0 | 0 | 0 |
| Calculation error | 0 | 0 | 0 | 0 | 0 |
| Protocols not followed (scan ordered before diagnostic MRI received; inadequate handover; unauthorised person incorrectly completed request) | 2 | 3 | 2 | 0 | 7 |
| Patient ID not checked | 1 | 0 | 5 | 0 | 6 |

| Type of accident | Nuclear medicine | Therapy | Radiology | Other | Total |
|---|---|---|---|---|---|
| Other medical | 3 | 1 | 2 | 0 | 6 |
| Industrial/other | - | - | - | 0 | 0 |
| **Total number of reported accidents** | **49** | **9** | **27** | **0** | **85** |

Table 3 gives the number of accidents, **greater than 1mSv**, reported to the Council between 2015-20.

**Table 3 Accidents (> 1 mSv) reported to the Council between 2015 and 2020, by category**

| Accident category | 2015–16 | 2016–17 | 2017–18 | 2018–19 | 2019–20 |
|---|---|---|---|---|---|
| Nuclear medicine | 38 | 24 | 48 | 47 | 49 |
| Therapy | 7 | 13 | 3 | 7 | 9 |
| Radiology | 24 | 23 | 54 | 35 | 27 |
| Other | 1 | 0 | 0 | 0 | 0 |
| **Total** | **70** | **60** | **105** | **89** | **85** |

Before 2018 the Council provided summaries only of accidents involving more than 1 mSv of radiation. Including summaries for accidents of less than 1 mSv helps the council monitor all accident trends. Table 4 summarises the causes of incidents, **less than 1 mSv,** that were reported to the EPA and reviewed by the Council in 2019–20.

**Table 4 Summary of causes of radiation incidents (<1 mSv) reported in 2019–20**

| Type of accident | Nuclear medicine | Therapy | Radiology | Other | Total |
|---|---|---|---|---|---|
| Patient notes/plans/requests not interpreted/read/checked correctly | 1 | 13 | 0 | 0 | 14 |
| Incorrect isotope selected and drawn up | 1 | 0 | 0 | 0 | 1 |
| Incorrect isotope drawn up by supplier | 0 | 0 | 0 | 0 | 0 |
| Equipment/software failure | 3 | 0 | 6 | 0 | 9 |
| Booking/request error: Incorrect procedure requested for the right patient | 0 | 0 | 1 | 0 | 1 |
| Booking/request error: Failure to cancel booking | 0 | 0 | 0 | 0 | 0 |
| Booking/request error: Booking request not amended with new scan requested | 0 | 0 | 0 | 0 | 0 |
| Booking/request error: Same examination repeated | 0 | 0 | 3 | 0 | 3 |
| Booking/request error: Wrong patient name entered on request form | 0 | 0 | 0 | 0 | 0 |
| Radiopharmaceutical not administered correctly (injection into cannula) | 1 | 0 | 0 | 0 | 1 |
| Operator error (CTs, PET/CT) | 1 | 1 | 2 | 0 | 4 |
| Physiology (failure of radiopharmaceutical) | 0 | 0 | 0 | 0 | 0 |
| Calculation error | 0 | 1 | 0 | 0 | 1 |

| Type of accident | Nuclear medicine | Therapy | Radiology | Other | Total |
|---|---|---|---|---|---|
| Protocols not followed (scan ordered before diagnostic MRI received; inadequate handover; unauthorised person incorrectly completed request) | 0 | 1 | 3 | 0 | 4 |
| Patient ID not checked | 0 | 0 | 5 | 0 | 5 |
| Other medical | 1 | 0 | 1 | 0 | 2 |
| Industrial/other | - | - | - | 1 | 1 |
| **Total number of reported accidents** | **8** | **16** | **21** | **1** | **46** |

Table 5 summarises reported incidents < 1 mSv.

**Table 5 Summary of reported incidents < 1 mSv**

| Accident group category | 2018–19 | 2019–20 |
|---|---|---|
| Nuclear medicine | 11 | 8 |
| Therapy | 0 | 16 |
| Radiology | 57 | 21 |
| Other | 1 | 1 |
| **Total** | **69** | **46** |

# Appendix 1: Objects of the Act

Section 3 of the Act prescribes the objects of the Act as follows:

a. to secure the protection of persons and the environment from exposure to ionising and harmful non-ionising radiation to the maximum extent that is reasonably practicable, taking into account social and economic factors and recognising the need for the use of radiation for beneficial purposes
b. to protect security-enhanced sources from misuse that may result in harm to people or the environment
c. to promote the radiation protection principles.

The radiation protection principles are as follows:

a. **justification of a practice** by assessing that the benefits of the practice involving exposure to ionising radiation outweigh any detriment
b. **optimisation of protection** by ensuring that each of the following is kept as low as reasonably achievable, taking into account economic and social factors:
    i. the magnitude of individual doses of ionising radiation
    ii. the number of people exposed to ionising radiation
    iii. the likelihood of exposure to ionising radiation.
c. **dose and risk limitation** by setting dose limits or imposing other measures so that the health risk to any person exposed to ionising radiation is kept below levels that are generally considered to be unacceptable.

A person is to take the radiation protection principles into consideration when exercising functions under this Act or under a licence.

# Appendix 2: Constitution of the Council

The Council consists of 17 members appointed by the Minister:

a. the Chairperson of the Authority or a member of staff of the Authority, who is to be the Chairperson of the Council
b. a medical practitioner who is a specialist in radiology
c. a radiographer with expertise in the field of human diagnostic radiography
d. a person with expertise in the industrial uses of radiation
e. a person with expertise in health physics
f. a medical practitioner who specialises in nuclear medicine
g. a person with expertise in non-ionising radiation
h. a person with expertise in work health and safety
i. a person who is an Australian lawyer of at least seven years standing
j. a person who represents community interests
k. a person nominated by the Secretary of the Ministry of Health
l. a radiation oncologist
m. a medical physicist
n. a person nominated by the Secretary of the Department of Finance, Services and Innovation and who is employed in the part of the Department that is principally involved in the administration of the Work Health and Safety Act 2011
o. a person with expertise in naturally occurring radioactivity
o.1 a person with expertise in mine radiation safety
p. a person chosen by the Minister for such reasons as the Minister thinks fit.

# Appendix 3: Membership and attendance at Council meetings in 2019–20

The Council met five times during the reporting period.

**Table 6 Council membership and meeting attendance 2019–20**

| Member | Appointed position | Meetings attended |
|---|---|---|
| Mr Asela Atapattu<br>(term expires 15/2/2021) | Chairperson | 4 |
| Dr Philip Pasfield<br>(term expires 22/1/2022) | Medical practitioner who is a specialist in radiology | 4 |
| Mr Luke Platt<br>(term expires 22/1/2022) | Radiographer with expertise in the field of human diagnostic radiography | 2 |
| Mr Frank Galea<br>(term expires 30/11/2020) | Person with expertise in the industrial uses of radiation | 5 |
| Mr Brent Rogers<br>(reappointed 19/12/2019, term expires 18/12/2022) | Person with expertise in health physics | 5 |
| Dr Hugh Dixson<br>(term expires 22/1/2022) | Medical practitioner who specialises in nuclear medicine | 5 |
| Assoc. Prof. Lee Collins AM<br>(term expires 30/11/2020) | Person with expertise in non-ionising radiation | 4 |
| Andrew Niven<br>(appointed 19/12/2019, term expires 18/12/2022)<br>Ms Kelly Lovely<br>(term expired 18/12/2019) | Person with expertise in work health and safety | 4 |
| Ms Fiona Henderson<br>(term expires 30/11/2020) | Person who is an Australian lawyer of at least seven years standing | 4 |
| Ms Joanne Muller<br>(term expires 15/2/2021) | Person who represents community interests | 3 |
| Ms Kate Lloyd<br>(term expires 16/2/2021, resigned 18/10/2019)<br>Ms Ellen Rawstron<br>(appointed 19/10/2019, term expires 15/2/2021) | Person nominated by the Secretary of the Ministry of Health | 5 |
| Ms Ingrid Klobasa<br>(appointed 18/10/2019, term expires 17/10/2022) | Deputy to a person nominated by the Secretary of the Ministry of Health | |
| Dr Dion Forstner<br>(term expires 22/1/2022) | Radiation oncologist | 3 |

| Member | Appointed position | Meetings attended |
|---|---|---|
| Dr Richard Smart<br>(term expires 30/11/2020) | Medical physicist | 5 |
| Mr Andrew Battye<br>(term expires 15/2/2021, resigned 1/7/2019)<br>Mr Mark Moskvitch<br>(appointed 18/10/2019, term expires 17/10/2022) | Person nominated by the Secretary of the Department of Finance, Services and Innovation involved in the administration of the *Work Health and Safety Act 2011* | 4 |
| Mr Cameron Jeffries<br>(term expires 30/11/2020) | Person with expertise in naturally occurring radioactivity | 4 |
| Mr John Stacpoole<br>(appointed 18/10/2019, term expires 17/10/2022) | Person with expertise in mine radiation safety | 4 |
| Ms Leanne Houston<br>(term expires 15/2/2021) | Person chosen by the Minister | 4 |

# Appendix 4: MoU between the EPA and the Council

## Statement of common intent

This Memorandum of Understanding (MoU) has been agreed between the EPA and the Radiation Advisory Council (the Council) to document the practical aspects of the way that each will work with the other to advance radiation safety in NSW. The EPA provides administrative support to the Council.

Both the Council and the EPA are committed to a cooperative and collaborative partnership with the aim of advancing the objectives of the *Radiation Control Act 1990* (the Act). This MoU shall be reviewed every three years and remain in force until such time as both parties agree otherwise.

The roles and responsibilities for each body are set out in the Act. Fundamentally, the Council provides expert advice to the EPA and the Minister across all radiation safety matters, while the EPA has responsibility for administering the regulatory functions provided by the Act. This MoU includes an agreement on how advice from the Council will be used by the EPA in the details of issuing licences and accreditations.

The Council also has a key role in helping the EPA develop radiation safety policy for NSW. The EPA has responsibility for formally adopting and giving effect to such policies. The EPA must also take into account NSW Government policy, any direction from the Minister and other advice it receives in developing and implementing policy. In recognition of the Council's special expertise, the EPA will engage openly, early and in detail with the Council in the development of radiation safety policy matters.

## Agreed details of how the Council and the EPA collaborate

### 1. Development of regulatory guidelines and policies

The EPA will provide the Council with drafts of any new or amended guidelines, policies or standards that are developed or reviewed by the EPA or other external bodies.

The EPA will seek the formal advice of the Council at each stage in the process of the development of these guidelines, policies and standards. This consultation will include the results of any feedback from community consultations. The Council will also be formally asked to consider endorsing the final products of the development of guidelines, policies and standards.

### 2. Provision of advice from the Council to the Minister

Section 30 of the Act gives the functions of the Council in relation to provision of advice to the Minister.

1. The Council is to advise the Minister on:
    a. proposed amendments to this Act and the making, amendment or repeal of regulations under this Act
    b. administration of this Act and the regulations
    c. measures to prevent or minimise the dangers arising from radiation
    d. the granting of exemptions authorised by the regulations for periods exceeding 60 days
    e. such other matters relating to radiation safety as the Minister considers appropriate.
2. Any such advice may be given either at the request of the Minister or without any such request.

The Council may also provide advice to the EPA from time to time, as it sees fit and on issues that it considers of relevance, at the request of the EPA or of its own accord.

## 3. Correspondence

When requested by the Council to prepare correspondence on its behalf, the EPA will present a draft of the correspondence for comment. After amendments to the draft have been prepared in light of the comments offered by the Council, the EPA will submit a final version for endorsement before it is signed by the Chairperson of the Council.

The time frames for the preparation of drafts and presentation of final versions of correspondence for endorsement by the Council will be managed by the EPA to accommodate the workload of the EPA Environmental Solutions (Radiation) at the time.

Finalised correspondence which has been mailed out, and correspondence received, will be tabled by the EPA at the next Council meeting, subject to the deadlines for submission of business papers for that meeting.

## 4. Storage of documents

Records of meetings, including agendas, minutes and all associated documents, are kept by the EPA. These records will, as far as is possible, be kept in electronic format and will be made available to the members of the Council upon request to the EPA in a timely manner.

## 5. Provision of secretariat support

The EPA will provide secretariat support to the Council and all its committees. This support will include:

- preparation of agendas for meetings of the Council and committees and their distribution to Council members
- taking of minutes and their distribution to members
- preparation of any correspondence requested by the Council.

## 6. Development of procedures

The EPA and the Council will further develop the system of generic advice for applications to the EPA for licences and accreditations and the EPA will continue to refer applications not covered by the generic advice to the Council. The EPA will also seek the advice of the Council regarding radiation accidents and incidents and their investigation, and the assessment of radiation safety courses.

The EPA will seek active input from the Council on strategic and policy matters. These will include substantive input on any review or development of legislation, with emphasis on the development of standards, codes of practice and guidelines. There will be substantial activity during the development of the National Directory for Radiation Protection.

While recognising that the Council performs an advisory function, and that the EPA is the decision maker, the parties agree to work through disagreements as follows:

- There will be an opportunity for discussion, including consideration of the decision-making processes of both the Council and the EPA.
- The EPA will advise the Council if it has formed a view that it intends to make a decision that is inconsistent with the Council's advice and will provide an opportunity for discussion about the differences.
- The Council may request the EPA to provide an independent facilitator and the EPA will agree to consider each request in good faith.
- If the EPA decides to proceed in a manner inconsistent with the Council's advice, it will provide the Council with a written explanation of why it has decided to do so.

## 7. Determinations for licensing and accreditation

The EPA is the determining authority for applications for licences and accreditations and for variations to licences and accreditations as made under Part 2 of the *Radiation Control Act 1990*. The EPA is empowered by section 9(8) of the Act to seek and take into consideration the advice of the Council on such matters.

Section 30 (2A and 2B) of the Act empowers the Council to provide advice to the EPA on Part 2 applications at any time and requires the Council to do so when asked by the EPA. The advice provided by the Council may be generic or specific, as the circumstances require.

The Council has provided the EPA with generic advice on Part 2 applications and this advice, known as 'standing advice', is recorded at Schedule 2 of the Council's Corporate Governance and Operating Procedures manual. It is the duty of the EPA to keep the standing advice in Schedule 2 up to date. Part 2 applications that are fully covered by the standing advice at Schedule 2 are known as 'routine applications'. Part 2 applications that are not covered by the standing advice, or are only partly covered, are known as 'non-routine applications'.

Before any officer with the delegated authority to do so determines a Part 2 application, they must have regard to the relevant requirements of Part 2 of the Act, the Radiation Control Regulation 2013 and the standing advice of the Council.

Unless the CEO of the EPA has agreed in writing to the following procedure being varied, the officer:

- may approve any routine application without first seeking the specific advice of the Council on the application, but
- before approving any non-routine application, must seek and take into consideration the advice of the Council on the application, and
- before refusing any application, must seek and take into consideration the advice of the Council on the application.

Normally the CEO of the EPA will approve a variation in this procedure only in an emergency, in which case the agreement of the Council with the determination is to be sought retrospectively as soon as practicable.

**Barry Buffier**

CEO

NSW Environment Protection Authority

**Craig Lamberton**

Chairperson

Radiation Advisory Council

[The MoU was signed by both parties on 30 June 2016.]

# Appendix 5: Membership of Council committees in 2019–20

**Table 7 Course and Competency Committee membership 2019–20**

| Member | Membership category |
|---|---|
| Assoc. Prof. Mr Lee Collins (Chair) | Expert in non-ionising radiation (medical physicist (radiology) |
| Mr Paul Cardew | Expert outside RAC: medical physicist specialist (radiation oncology, radiology and nuclear medicine) |
| Mr Frank Galea | Expert in industrial uses of radiation |
| Mr Cameron Jeffries | Expert in naturally occurring radioactivity |
| Ms Daniela Freschi | EPA Environmental Solutions (Radiation) |

**Table 8 Guideline 3 Review Committee membership 2019–20**

| Member | Membership category |
|---|---|
| Mr Frank Galea (Chair) | Expert in industrial uses of radiation |
| Mr Brent Rogers | Expert in health physics |
| Mr Sean Nunan | EPA Environmental Solutions (Radiation) |

**Table 9 Guideline 6 Review Committee membership 2019–20**

| Member | Membership category |
|---|---|
| Dr Richard Smart (Chair) | Medical physicist (nuclear medicine) |
| Mr Lee Collins | Expert in non-ionising radiation |
| Dr Philip Pasfield | Radiologist |
| Mr Paul Cardew | Expert outside RAC: medical physicist specialist (radiology, radiotherapy and mammography) |
| Ms Tiffany Chiew | Expert outside RAC: radiographer |
| Ms Lucy Cartwright | Expert outside RAC: medical physicist specialist (radiology) |
| Dr Jennifer Diffey | Expert outside RAC: medical physics specialist (radiology) |
| Dr Ravinda Grewald | Expert outside RAC: medical physics specialist (radiology) |
| Mr Adam Jones | Expert outside RAC: medical physicist (radiology) |
| Mr Peter Williams | EPA Environmental Solutions (Radiation) |

**Table 10 Shielding Assessment and Verification Committee membership 2019–20**

| Member | Membership category |
|---|---|
| Dr Richard Smart (Chair) | Medical physicist (nuclear medicine) |
| Mr Paul Cardew | Expert outside RAC: medical physicist specialist (radiation oncology, radiology and nuclear medicine) |
| Mr Lee Collins | Expert non-ionising radiation (medical physicist (radiology) |
| Mr Kevin Fitzsimmons | Expert outside RAC: Industry (shielding and construction) |
| Mr Frank Galea | Expert in industrial uses of radiation |

| Member | Membership category |
|---|---|
| Mr Nick Hille | Medical physics specialist (radiology and nuclear medicine) |
| Mr Dean Inwood | Medical physics specialist (radiation oncology) |
| Mr Adam Jones | Medical physics specialist (radiology) |
| Mr Brent Rogers | Health physicist |
| Ms Daniela Freschi | EPA Environmental Solutions (Radiation) |

# Acronyms and abbreviations

**Table 11 Acronyms and abbreviations**

| Acronym or abbreviation | Name |
|---|---|
| ACPSEM | Australian College of Physical Scientists and Engineers in Medicine |
| AHPPC | Australian Health Protection Principal Committee |
| ANSTO | Australian Nuclear Science and Technology Organisation |
| ARPANSA | Australian Radiation Protection and Nuclear Safety Agency |
| CRE | consulting radiation expert |
| CT | computed tomography |
| enHealth | Environmental Health Standing Committee |
| EPA | NSW Environment Protection Authority |
| HCCC | NSW Health Care Complaints Commission |
| IAEA | International Atomic Energy Agency |
| MoU | Memorandum of Understanding |
| mSv | millisievert |
| NDRP | National Directory for Radiation Protection |
| PET | positron emission tomography |
| RAC | Radiation Advisory Council |
| RHC | Radiation Health Committee |