



Australian Government
**Australian Radiation Protection
and Nuclear Safety Agency**



Quarterly Report
of the
Chief Executive Officer of ARPANSA

July to September 2020



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Acknowledgement of Country

ARPANSA respectfully acknowledges Australia's Aboriginal and Torres Strait Islander communities and their rich culture and pays respect to their Elders past and present. We acknowledge Aboriginal and Torres Strait Islander peoples as Australia's first peoples and as the Traditional Owners and custodians of the land and water on which we rely.

We recognise and value the ongoing contribution of Aboriginal and Torres Strait Islander peoples and communities to Australian life and how this enriches us. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.

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Letter of transmittal

10 December 2020

Senator the Hon Richard Colbeck
Minister for Aged Care and Senior Australians
Minister for Youth and Sport
Senate
Parliament House
Canberra ACT 2600

Dear Minister

The *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act) requires the Chief Executive Officer (CEO) of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) to submit to the Minister, at the end of each quarter, a report on:

- the operations during the quarter of the CEO, ARPANSA, the Radiation Health and Safety Advisory Council (the Council), the Nuclear Safety Committee (the NSC) and the Radiation Health Committee (RHC)
- details of directions given by the Minister to the CEO under section 16 of the Act
- details of directions given by the CEO under section 41 of the Act
- details of improvement notices given by inspectors under section 80A of the Act
- details of any breach of licence conditions by a licensee, of which the CEO is aware
- details of all reports received by the CEO from the Council and the NSC under Part 4, paragraphs 20(f) or 26(1)(d) of the Act, and
- A list of all facilities licensed under Part 5 of the Act.

I am pleased to provide you with a report, meeting the requirements of the Act, covering the period 1 July to 30 September 2020.

Please note that subsection 60(6) of the Act requires you to cause a copy of the report to be laid before each House of the Parliament within 15 sitting days of the day on which this report was given to you.

Yours sincerely



Carl-Magnus Larsson
CEO of ARPANSA

The operations of the CEO and ARPANSA

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is the Australian Government's primary authority on radiation protection and nuclear safety. Our purpose is to protect the Australian people and the environment from the harmful effects of radiation, through understanding risks, best practice regulation, research, policy, services, partnerships and engaging with the community.

ARPANSA sits within the Department of Health portfolio and has a single outcome, as set out in the 2020-21 Portfolio Budget Statements (PBS):

Protection of people and the environment through radiation protection and nuclear safety research, policy, advice, codes, standards, services and regulation.

The Radiation Protection and Nuclear Safety Program, contained within the 2020-21 PBS, describes four performance criteria, against which ARPANSA seeks to achieve its outcome. These criteria are:

- Provide high quality advice to the Australian Government and the community on the health, safety and environmental risks from radiation.
- Provide emergency preparedness and response systems for a radiological or nuclear incident.
- Promote patient safety in radiotherapy and diagnostic radiology.
- Ensure risk-informed and effective regulation.

The report on the operations of the CEO and ARPANSA focuses on these criteria.

Provide high quality advice to government and the community on health, safety and environmental risks from radiation

Occupational exposure to radiation

The Australian National Radiation Dose Register (ANRDR) holds dose records for around 46,000 workers. This includes full coverage of workers from all state and territory-licensed uranium mining and milling operations, and partial coverage of workers from Commonwealth licence holders, state and territory regulatory bodies, the mineral sands mining and processing industry, as well as the medical and veterinary sectors. The aim of the ANRDR is to cover all occupationally exposed workers in Australia, and work to ensure that this can be achieved across all jurisdictions is in progress.

During the quarter, the ANRDR Advisory Board worked to develop the ANRDR Strategic Directions as a roadmap to achieve coverage of all workers occupationally exposed to ionising radiation in Australia. ARPANSA coordinates the ANRDR Advisory Board, which consists of members from most jurisdictional regulators (including an ARPANSA representative). The board's primary purpose is to be a place for jurisdictional radiation regulators to represent their views with regard to ANRDR matters, and to provide advice and guidance to ARPANSA on the approach to development and national expansion of the ANRDR. The board will meet in November 2020 to approve the ANRDR Strategic Directions which will allow implementation of work projects including engaging with dosimetry service providers to submit their dose records directly to the ANRDR.

Action Plan for the Enhanced Electromagnetic Energy (EME) Program

ARPANSA published its plan to implement activities under the Australian Government's Enhanced EME Program, with additional resources being obtained from July 2020. The Australian Government announced this four-year program in December 2019 to provide clear, reliable and reputable information accessible to all Australians, and included funding for ARPANSA to deliver evidence-based scientific advice with a clearly informed picture of the problem and associated risks and uncertainty. The ARPANSA components of the Enhanced EME Program include increased engagement into international forums (such as the World Health Organization and International Commission on Non-Ionizing Radiation Protection), undertaking or partnering on new EME research, undertaking studies to assess EME exposure in the Australian community and providing expert advice for Australia on EME and health. The ARPANSA EME Action Plan outlining the activities that will be undertaken as part of the Enhanced EME program was published in July:

<https://www.arpansa.gov.au/news/new-electromagnetic-energy-action-plan>

Draft safety standard for radio wave exposure

In August 2020, ARPANSA released a public consultation draft of the new safety standard for exposure to radiofrequency electromagnetic energy – also known as radio waves. The safety standard sets limits for public and occupational exposure across all types of radio waves. Radio waves are also widely used in many industrial heating processes. On 10 September, ARPANSA hosted an online consultation forum for industries applying the standard to discuss the application of the new safety standard. Over 130 people participated in the event. When finalised, taking into account consultation input and amended as required, the intention is for the new safety standard to replace ARPANSA's existing standard for radio waves: [Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields - 3 kHz to 300 GHz \(2002\)](#).

ARPANSA's radon laboratory contributes to the fight against COVID-19

ARPANSA has worked with a team of physicians, engineers and scientists from Western Health, the University of Melbourne and CSIRO to assist in characterising the aerosols generated by COVID-19 patients. The COVID-19 pandemic has required a better understanding of airborne particles in hospitals to help engineers develop additional controls to stop the spread of COVID-19 in medical settings. ARPANSA was able to deploy the advanced nanoparticle measurement capacity of our radon laboratory to measure particle sizes and behaviour. Through monitoring the nature of these small particles, the data collected is assisting in designing better ventilation systems for hospitals and allowing for more effective and targeted use of protective equipment.

Comprehensive Nuclear-Test-Ban Treaty (CTBT) monitoring stations

Following interruptions to ARPANSA's scheduled annual maintenance at CTBT monitoring stations due to the COVID-19 travel restrictions in the previous quarter, ARPANSA was able to make arrangements to resume its scheduled maintenance activities which support ongoing local maintenance at all Australian stations including Cocos (Keeling) Islands with additional maintenance visits now scheduled for the coming months. International travel restrictions continue to impact scheduled ARPANSA maintenance at international stations that Australia operates, however remote support from local operators at these stations continues.

This work forms part of Australia's involvement in the CTBT, which bans nuclear explosions and testing and includes a monitoring network to detect nuclear activity. The CTBT international monitoring system aims to ensure that no nuclear explosion goes undetected. ARPANSA is responsible for radionuclide monitoring stations in nine locations; seven in Australian territories including Cocos (Keeling) Islands, Antarctica and Macquarie Island; and two in the Pacific region (Fiji and Kiribati).

Promote patient safety in radiotherapy and diagnostic radiology

Australian Clinical Dosimetry Service (ACDS)

This quarter, ARPANSA modified its ACDS on-site audit procedures to ensure that the national audit program could re-start safely within the context of COVID-19. Alternative measures were implemented including the temporary relocation of staff for audit campaigns in New South Wales, Queensland and Western Australia that had not been able to occur in the previous quarter with the sudden introduction of quarantine requirements for all travellers from Victoria. The alternative measures enabled audits to again be performed in those states once quarantine requirements had been met. The Victorian audit schedule resumed after a short hiatus.

Remote audits have been used as an interim measure in a few cases, prior to staff performing an on-site audit. The ACDS has been able to respond to the changing conditions imposed by various pandemic restrictions with innovative approaches to service delivery in order to maintain a quality service to facilities and manage patient risk in Australia.

Medical Imaging

ARPANSA's National Diagnostic Reference Level Service (NDRLS) received 983 surveys of patient dose in computed tomography (CT) scans during the quarter, compared with 852 for the same period last year. The NDRLS surveys, completed by participating imaging facilities, collect data on metrics for patient dose from ionising radiation in diagnostic imaging, particularly for CT. ARPANSA uses this data to calculate Australian diagnostic reference levels (DRLs) for common types of CT scans. The DRLs provide a point of comparison so a given imaging facility can compare their practice with that of their peers. The aim of DRL comparisons is to encourage imaging facilities to review their practice and thereby ensure an appropriate balance of benefit and risk for patients. This helps to avoid excessive radiation dose to patients from medical imaging. A larger data sample gives increased confidence that the DRLs ARPANSA sets truly reflect current practice across Australia.

Ensure risk-informed and effective regulation

Significant regulatory activities

ARPANSA issues regulatory approvals that are required prior to commencing certain activities. These can include issuing new or amended licences, changes with significant safety implications, or the construction of items important for safety. In the quarter, the following regulatory approvals were provided:

- An exemption for the Department of Defence was granted for gaseous tritium light sources typically used in night fighting equipment and portable navigation instruments. ARPANSA has determined that Defence successfully demonstrated the low hazardous nature of the devices in normal and accidental use conditions.

- Approval was provided for the operation of post-irradiation examination hot cells at the existing Australian Nuclear Science and Technology Organisation (ANSTO) Materials Fabrication Bay (MFB) which, together with the MFB, has been relicensed as the Nuclear Materials Facilities.
- Approval was given to ANSTO with regard to a section 63 request made under the Australian Radiation Protection and Nuclear Safety (ARPANS) Regulations 2018 to amend OPAL processes and documentation to align with the site-wide Safety and Reliability Assurance process, the subject of a previous section 63 approval replacing the Safety Assurance Committee process.
- Approval was given to ARPANSA's Medical Radiation Services Branch (MRSB) with regard to a section 63 request to relocate the Synergy Linear Accelerator Control Room. The Regulatory Assessment Report was independently reviewed by the Tasmanian Department of Health. Separately, following a detailed assessment and review, ARPANSA reviewed additional information received from MRSB regarding compliance with, and exemption from, Radiation Health Series 24 requirements and found this acceptable, allowing closeout of the matter.

Inspections

ARPANSA conducted four scheduled inspections, and four site visits, during the quarter. An additional inspection was conducted which had been deferred from the previous quarter. ARPANSA undertakes a program of scheduled inspections of licence holders to monitor compliance with the ARPANS Act and Regulations. The scope and frequency of inspections are determined from an assessment of the risk presented from the controlled activity and a range of factors including licence holder safety performance. Four inspections were postponed due to restrictions associated with COVID-19. All of these were for low risk facilities – two are no longer operational, pending decommissioning, and one is not yet commissioned and operational.

This quarter's inspections did not identify any potential non-compliances. However, eight areas for improvement were identified. Areas for improvement indicate where licence holder safety performance could be improved, such as to meet international best practice.

Inspections play an important part in ARPANSA's compliance and performance monitoring program. A well-implemented, rigorous inspection program supplemented by monitoring and performance reviews provides confidence that licence holders are operating safely. The inspection reports can be found on ARPANSA's website at www.arpansa.gov.au/regulation/inspections/reports.

Standards Development

ARPANSA has been collaborating with Standards Australia in a significant re-write of Australian/New Zealand Standard: Safety in laboratories - Non-ionizing radiations - Electromagnetic, sound and ultrasound (AS/NZS 2243.5:2004). This revision will have an impact on ARPANSA licence holders such as the Australian National University, CSIRO and the Department of Defence and will be provided to these agencies for comment as the standard develops. The revised 'Standard for Limiting Exposure to Radiofrequency Fields – 100 KHz to 300 GHz (RPS S-1)' based on the 2020 guidelines of the International Commission for Non-ionizing Radiation Protection (ICNIRP) for high frequency fields is out for public consultation until 21 October 2020.

Stakeholder engagement

Stakeholder consultation on the draft *Regulatory Guide: Safety Analysis Report for Controlled Facilities* was completed in August 2020. Stakeholders' comments are currently being addressed. It provides guidance for ARPANSA licence holders and applicants preparing safety analysis for non-reactor facilities and it helps to ensure that international best practice standards are applied in the Commonwealth. ARPANSA will also use the guide during the assessment of applications for regulatory licenses. Development of this guidance is part of an action plan developed following the Integrated Regulatory Review Service mission to Australia in 2018.

Stakeholder consultation on the draft source licence Performance Objectives and Criteria (POCs) is due to be completed on 2 October 2020. Stakeholder comments are already being addressed. The POCs support the assessment of safety of controlled activities by guiding the planning and conduct of ARPANSA inspections. The current POCs have been in use since 2015. In the interest of continuous improvement, ARPANSA has reviewed the current POCs and determined that a preferred structure would be to align them more closely to ARPANSA *Regulatory Guide Plans & Arrangements for Managing Safety*.

Radioactive material import and export permits

The import and export of radioactive material to and from Australia requires permission under Regulation 4R of the Customs (Prohibited Imports) Regulations 1956 and Regulation 9AD the Customs (Prohibited Exports) Regulations 1958. Under these regulations, the Minister for Health has authorised ARPANSA officers to issue import and export permits. Permits ensure that radioactive material entering and exiting the country is subject to appropriate regulatory control. This includes a requirement that the end user is authorised to deal with the material, and that it is subject to appropriate safety and security provisions en route and at its final destination. This material is used for a wide range of medical, industrial and scientific purposes.

Permits issued this quarter:

Type of permits	Urgent (single shipment)	Standard (single shipment)	12 months
Import of non-medical radioisotope	53	50	4
Import of medical radioisotope	0	134	8
Export of high activity source	-	7	34

Transport of radioactive material

Safety

ARPANSA issued two validation certificates to ANSTO for special form radioactive material. The special form materials are sealed capsules that will be used for managing disused radioactive sources.

Security

ARPANSA endorsed one transport security plan this quarter. ARPANSA approves certain plans and packages for licence holders to transport significant quantities of radioactive material. Under the Code of Practice for the Security of Radioactive Sources (RPS 11, 2019), security-enhanced sources are assessed to ensure the security considerations, including the transport arrangements and route, are suitable for the shipment.

International engagement

ARPANSA's international engagement provides the agency with the means of influencing the international radiation protection and nuclear safety and security framework, and for taking stock of international developments to ensure ARPANSA's regulatory framework and radiation protection standards are based on international best practice. ARPANSA did not undertake any international travel during the quarter due to the impact of global travel restrictions relating to COVID-19. However, ARPANSA maintained international relations remotely wherever possible through a range of virtual means.

ARPANSA has participated in webinars provided by the Nuclear Energy Agency Radioactive Waste Management Committee, and also International Atomic Energy Agency (IAEA) webinars. In particular, ARPANSA staff participated in an IAEA webinar on the Impact of the COVID-19 Pandemic on Regulatory Activities for the Safety of Radiation Sources that followed-up on an IAEA survey of countries on this topic. Participating in this webinar allowed ARPANSA to contribute to the global nuclear safety regime through sharing with other international regulatory bodies our lessons learned about the impact of the pandemic on regulatory oversight. ARPANSA has also shared the lessons learned from the IAEA survey with the Australian State and Territory regulators through the Radiation Health Committee to improve regulatory oversight of the safety and security of radiation sources across Australia.

In July, the Deputy CEO chaired three informal meetings of the representatives of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) that were held in place of the planned 67th session of UNSCEAR to discuss progress since the 66th session in 2019. The 67th session has now been postponed until November 2020 and will be held as an official online United Nations meeting.

ARPANSA staff participated remotely in the 55th session of the Comprehensive Test Ban Treaty Organisation (CTBTO) Working Group B held in Vienna, Austria, from 24 August to 4 September. The meeting had a reduced scope compared to previous meetings that are usually held on a twice-yearly basis. Discussions on technical issues related to the Comprehensive Test Ban Treaty included plenary sessions and updates from the Provisional Technical Secretariat directors.

An ARPANSA staff member chaired the IAEA's first virtual Technical Meeting on the Revision of IAEA Safety Standards Series No. GS-G-2.1 'Arrangements for Preparedness for a Nuclear or Radiological Emergency' from 20-24 July. Over 100 participants joined from around the world to discuss the addressing of over 500 comments on the current version of the document, which is crucial for international and national emergency planning. ARPANSA presented an analysis of the draft (DS504) in comparison to the Australian Emergency Exposure Guide (Radiation Protection Series G-3).

Two ARPANSA staff were nominated for the Organisation of Economic Cooperation and Development (OECD) Nuclear Energy Agency (NEA) Committee on the Decommissioning of Nuclear Installations and Legacy Management (CDLM) Expert Group on a Holistic Process for Decision Making on Decommissioning and Management of Complex Sites.

Details of directions given by the Minister

No directions were given by the Minister under section 16 of the Act.

Details of directions given by the CEO

No directions were given by the CEO under section 41 of the Act.

Details of improvement notices given by inspectors

ARPANSA issued one improvement notice under section 80A of the Act to the National Archives of Australia (NAA). During a routine inspection it was determined that NAA had not maintained a dedicated radiation safety officer and had not maintained training records or procedures for the use of controlled apparatus that NAA no longer considered the need to use. On this basis, ARPANSA formed the view that in the future NAA would likely contravene the Act and the Regulations and issued an improvement notice requiring NAA to dispose of the apparatus before December 2020. NAA has since completed this task and the matter is now considered closed.

Details of any breach of licence conditions by a licensee

There were no breaches determined in this quarter.

Facilities licensed under Part 5 of the ARPANS Act

No facility licences were issued in the period.

The operations of the Council and committees

Radiation Health and Safety Advisory Council

The Radiation Health and Safety Advisory Council (RHSAC) met via videoconference on 27-28 July 2020, and 2 September 2020.

The Council meeting on 27-28 July was the first since Minister Colbeck appointed a number of members, following the expiry of previous terms. The Council discussed ARPANSA's community engagement on the National Radioactive Waste Management Facility (NRWMF), and an overview of contemporary radiation safety issues in Australia in order to prioritise its forward agenda. Topics identified initially include NRWMF community engagement, laser technology and the increasing use of non-ionising radiation, the impact of medical imaging uptake in Australia, and a draft National Strategy for Radiation Protection.

The Council held a separate meeting on 2 September to discuss a letter from the Barngarla Determination Aboriginal Corporation (BDAC). The Council agreed to reply and note BDAC's concerns and position, and Council's 2017 NRWFM advice to the CEO of ARPANSA.

A draft letter of advice from the Council to the CEO of ARPANSA on naturally occurring radioactive material in Australia has been finished and is currently with the Council Chair for final review.

The minutes of past meetings are on ARPANSA's website at www.arpansa.gov.au/rhsac. The next meeting is scheduled for 22 October 2020 via videoconference on the topic of medical imaging.

Reports to the CEO from the RHSAC under paragraph 20(f) of the Act

The RHSAC did not provide any reports to the CEO during this quarter.

Radiation Health Committee

The Radiation Health committee (RHC) met via videoconference on 22 July 2020. This meeting was primarily intended to monitor progress on a number of projects at a time when many members and regulatory agencies are tasked with managing the societal impact of the COVID-19 pandemic.

The RHC agreed to develop additional competencies for non-medical use of radiation sources taking into account the competencies for users of fixed radiation gauges and mobile soil density and moisture gauges.

The RHC also endorsed the revised Standard for Limiting Exposure to Radiofrequency Fields – 100 KHz to 300 GHz (RPS S-1) to go out for public consultation.

The minutes of RHC meetings are provided online at www.arpansa.gov.au/rhc.

The next RHC meeting is scheduled to take place virtually on 18 and 19 November 2020.

The nomination period for new members on the RHC for the next 2021-2023 triennium closed on 31 August 2020. Appointment of new members is currently being finalised.

Nuclear Safety Committee

The Nuclear Safety Committee (NSC) met via videoconference on 13 August 2020.

Topics discussed included the Australian Radioactive Waste Agency (ARWA) that was recently formed to oversee the proposed National Radioactive Waste Management Facility. The NSC commented on the stakeholder engagement process and the need to provide advice on regulatory processes and expectations whilst maintaining a clear delineation between applicant and regulator.

The NSC provided advice to ARPANSA on the content of regulatory guidance to licence applicants preparing Safety Analysis Reports.

The NSC was also informed of and discussed issues relating to established nuclear facilities, mostly operated by the Australian Nuclear Science and Technology Organisation (ANSTO). The minutes of NSC meetings are provided online at www.arpansa.gov.au/nsc.

The next NSC meeting is scheduled to take place via video conference on 13 November 2020.

The nomination for new members on the NSC for the next 2021-2023 triennium has closed. Appointment of new members is currently being finalised.

Reports to the CEO from the NSC under paragraph 26(1)(d) of the Act

The NSC did not provide any reports to the CEO during this quarter.