Australian Government

Australian Radiation Protection and Nuclear Safety Agency

arpansa

Quarterly Report

of the

Chief Executive Officer of ARPANSA

April to June 2022

ARPANSA
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Further information about this publication

If you would like to know more about the content of this publication, please contact ARPANSA on 1800 022 333 or **info@arpansa.gov.au**. Further information can be found on the ARPANSA website at **www.arpansa.gov.au**.

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.

Printed by:

CanPrint Communications Pty Ltd
16 Nyrang Street
Fyshwick ACT 2609

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Letter of transmittal

21 October 2022

The Hon Ged Kearney MP
Assistant Minister for Health and Aged Care
PO Box 6022
House of Representatives
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 and the Radiation Health Committee
- 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 Nuclear Safety Committee 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 April to June 2022.

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

Gillian Hirth
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 2021-22 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 2021-22 PBS, describes four Key performance measures, against which ARPANSA seeks to achieve its outcome. These measures are:

- Provide high quality advice to government and the community on 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 protection of people and the environment through efficient and effective regulation.

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

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

Enhanced Electromagnetic Energy (EME) Program

In June, ARPANSA staff participated in the BioEM conference held in Nagoya, Japan. The conference presented world leading bioelectromagnetic research and facilitated collaboration between ARPANSA and international scientists and organisations.

In April, the first successful project under the new EME Program Research Framework was announced. The project is a collaboration between ARPANSA, RMIT University and the Australian Centre for Electromagnetic Bioeffects Research to investigate potential non-thermal effects of higher frequency radio waves that are used by 5G technology.

Provide emergency preparedness and response systems for a radiological or nuclear incident

Incident Management Team Response to Ukraine Conflict

In April, Ukraine submitted a request for the replacement of stolen or damaged equipment relating to radiation safety through the International Atomic Energy Agency 's (IAEA) *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.* ARPANSA as the designated National Competent Authority under the Convention, instigated discussions with the Australian Nuclear Science and Technology

Organisation (ANSTO) and confirmed that both Agencies could provide a donation of equipment on behalf of Australia. ARPANSA's equipment for donation was tested, calibrated consolidated with the ANSTO equipment in preparation for shipping to Vienna and transfer of ownership to the IAEA which occurred in June. The equipment is expected to be received by the State Nuclear Regulatory Inspectorate of Ukraine in Kyiv, July 2022. Prior to this, ARPANSA provided advice to the Australian Government on the radiation protection and nuclear safety situation in Ukraine through the established Interdepartmental Emergency Task Force.

Promote patient safety in radiotherapy and diagnostic radiology

Australian Clinical Dosimetry Service (ACDS)

ARPANSA's Australian Clinical Dosimetry Service (ACDS) audit program continued full-service delivery, completing the quarterly on-site and remote mail-out audit schedule. The program measures and evaluates the radiation dose delivered by radiation oncology treatment machines, giving confidence to the facility and their patients that accurate radiation doses are delivered.

ARPANSA is working with the IAEA and dosimetry auditors globally to develop a world-first film dosimetry intercomparison tool. The intercomparison tool will enhance the quality and certainty of results in film dosimetry comparison for radiation auditors around the world and provide the IAEA with a resource to support greater use of film dosimetry across global radiotherapy providers.

Medical Imaging (MI)

ARPANSA completed a survey of radiation doses delivered to Australian patients in nuclear medicine imaging procedures, including positron emission tomography (PET). A summary and initial analysis of the data received has been prepared for discussion with representatives of relevant professional bodies in nuclear medicine. The data will be used to make recommendations for revision of the Australian national diagnostic reference levels (DRLs) for nuclear medicine and PET procedures.

The current Australian diagnostic reference levels for nuclear medicine can be found on the ARPANSA website: https://www.arpansa.gov.au/research-and-expertise/surveys/national-diagnostic-reference-level-service/current-australian-drls/nm

Primary Standards Dosimetry Laboratory (PSDL)

This quarter, ARPANSA completed "Key Comparisons" of ionising radiation standards, for megavoltage linear accelerator photons and low energy kilovoltage X-rays. The Key Comparison is a scientific exercise to establish the equivalence of radiation measurements in Australia with those overseas and maintain ARPANSA's internationally recognised Primary Standard status. This is a requirement of the authorisation from the National Measurement Institute (NMI) to maintain and disseminate the standard. These comparisons are one of the primary methods by which ARPANSA ensures that measurements of radiation dose in Australia can be trusted.

Ensure protection of people and the environment through efficient and effective regulation

Significant regulatory activities

ARPANSA routinely assesses licence applications and requests for approval to make changes to facilities and associated activities which may have significant implications for safety.

- ARPANSA approved 3 relevant changes, under section 63 of the Regulations, having significant safety implications for safety:
  - The first was for a change related to the Open-pool Australian Lightwater (OPAL) reactor and the update of its design extension conditions analysis and the implications to the safety case. The updated analysis considered lessons learned from the Japanese Fukushima accident and confirmed that that OPAL reactor design can withstand more serious accident conditions, as originally considered in the reactor design basis.
  - The second submission was for a change regarding the Primary Coolant System (PCS) Flap Valve operation for the OPAL reactor. The current automatic closure creates pressure pulses, which are thought to be a root cause for damage to the chimney riser. The chimney riser is where cooling water is extracted from the reactor core into the cooling system. The change is expected to reduce the pressure created and minimise the risk of further damage.
  - The third submission was related to works necessary to plan for the decommissioning of the Cyclotron facility at Camperdown in Sydney. The application permitted sampling activities, during which there is potential risk of releasing dust containing small amounts of radioactivity. ARPANSA's assessment indicated that the analysis and control measures in place demonstrated good safety and low risk from the activities.
- ARPANSA approved the construction of shielding for the CAN (container) Storage System within the Hot Cells and the Blowback Filter at the SyMo facility under section 66 of the Regulations. ANSTO's SyMo facility will use Synroc technology to immobilise waste from the production of molybdenum-99.

Inspections

ARPANSA conducted 3 inspections during the quarter. ARPANSA undertakes a program of scheduled inspections of licence holders to monitor compliance with the Act and the ARPANS Regulations. The inspection reports can be found at: www.arpansa.gov.au/regulation/inspections/reports.

Stakeholder engagement

- ARPANSA held its annual licence holder forum in Canberra at the Australian National University, with this year's theme focusing on radioactive waste. The forum is an opportunity to learn and share experience of radiation protection and nuclear safety, provide information on any new or upcoming regulatory changes in the areas of radiation protection and nuclear safety, as well as bring together licence holders to share knowledge about their chosen fields.
- ARPANSA Regulatory Services Branch has made the decision to remove the requirement to obtain pre-approval, from ARPANSA as a licence holder, for certain low risk radiation sources, following consultation with stakeholders. Disposal will still require notification to ARPANSA Regulatory

Services Branch; however, this change will help streamline the disposal process and relieve the regulatory burden on licence holders.

- ARPANSA is part of a radioactive material permit working group within the Simplified Trade System (STS) Implementation Taskforce (Taskforce). This group includes Australian Safeguards and Non-proliferation Office and Department of Industry, Science and Resources. The group is working to streamline import and export requirements which may lead to reduced regulatory burden.

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 of the Customs (Prohibited Exports) Regulations 1958. Under these regulations, ARPANSA officers are authorised to issue import and export permits.

Permits issued this quarter:

Type of permits	Urgent (single shipment)	Standard (single shipment)	12 months
Import of non-medical radioisotope	46	41	3
Import of medical radioisotope	0	147	9
Export of high activity source	0	10	0

Transport of radioactive material

- ARPANSA validated the Best Theratronics F-431 Type B(U) transport package design to allow for the safe transport of blood irradiators. This was due to the expiry of the previous 'original approval certificate' and implementation of a new revision authorized by the Canadian Competent Authority.
- 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. ARPANSA validated one transport security plan this quarter.

Details of directions given by the Minister under section 16 of the Act.

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

Details of directions given by the CEO under section 41 of the Act.

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

Details of improvement notices given by inspectors under section 80A of the Act.

No improvement notices were issued by ARPANSA under section 80A of the Act.

Details of any breach of licence conditions by a licensee

ARPANSA publishes performance history of licence holders on the ARPANSA website: www.arpansa.gov.au/regulation-and-licensing/regulation/our-regulatory-services/who-we-regulate/licence-holder-performance.

There were three breaches confirmed this quarter with minor safety implications or administrative failures to meet regulatory requirements:

- ANSTO self-reported failure to comply with a licence condition regarding the Operating Limits and Conditions (OLC) which required periodic calibration of the pond ultrasonic level detectors. The detectors were reported to be outside of the required OLC 3-yearly calibration period.
- Australian Trade and Investment Commission (Austrade) were found in breach under sub-section 31(2), for failing to provide compliance reports to the CEO of ARPANSA by the due dates and for failing to seek approval before disposal of a controlled apparatus.

Facilities licensed under Part 5 of the ARPANS Act this quarter

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 (the Council) met on the 16 June 2022 in Melbourne.

The Council discussed key considerations and principles for any future regulator of nuclear-powered submarines. There was also a debrief from the first meeting of Council's working group on the International Commission for Radiological Protection (ICRP) review of a future system of radiological protection.

The Council also discussed challenges for radiation protection capability and capacity in the Asia-Pacific, the issues presented by new laser products (such as welders) which present serious risks to health, and whether dose-minimisation technology should be a standard feature on medical scanners.

The minutes of past meetings are available at www.arpansa.gov.au/rhsac. The next meeting is scheduled for 18 and 19 August 2022.

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

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

Radiation Health Committee

The Radiation Health Committee (RHC) met on 26 May 2022 in Melbourne.

The RHC referred some issues to the Environmental Health Standing Committee (enHealth), a subcommittee of the Australian Health Protection Principal Committee (AHPPC), such as exemptions for radiation apparatuses, as well as radiation practitioner competencies. RHERP works on the implementation of codes and standards RHC develops. Other ongoing work at RHC includes efforts to finalise a compliance testing standard for radiation equipment, and a dose conversion factor update.

The RHC also established working groups to finish significant work underway to update the dentistry code (RPS 10), consolidate certain codes and Radiation Health Standards (for radiation gauges, well-logging, and x-ray equipment), and develop guidance for the medical exposure code.

The minutes of the meeting are available at www.arpansa.gov.au/rhc. The next meeting of the RHC is scheduled for 25 August 2022.

Nuclear Safety Committee

The Nuclear Safety Committee (NSC) met 10 June at ARPANSA's Sydney office.

The focus on the meeting was around the regulatory response to several ongoing issues including defects identified in the OPAL reactor chimney riser and ANSTO's surveillance program of the defects. In addition, the NSC was provided an overview of, and asked to provide any comments, on the Australian report to the Convention on Nuclear Safety.

The minutes of the meeting are available at www.arpansa.gov.au/nsc.

The next meeting of the NSC is scheduled for 21 October 2022.

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

No reports were provided during this quarter.