



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



**Quarterly Report**  
**of the**  
**Chief Executive Officer of ARPANSA**

**July to September 2018**



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**Australian Radiation Protection  
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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.

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# Letter of transmittal

22 January 2019

Senator the Hon Bridget McKenzie  
Minister for Regional Services, Sport, Local Government and Decentralisation  
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
- 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
- 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 2018.

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



Dr Carl-Magnus Larsson  
CEO of ARPANSA

## The operations of the CEO and ARPANSA

ARPANSA sits within the Department of Health portfolio.

ARPANSA has a single outcome, as set out in the *2018–19 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 2018–19 PBS, describes four performance objectives against which ARPANSA seeks to achieve its outcome. These criteria are:

- protecting the public, workers and the environment from radiation exposure
- promoting radiological and nuclear safety and security, and emergency preparedness
- promoting the safe and effective use of ionising radiation in medicine
- ensuring risk-informed and efficient regulation.

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

### Protecting the public, workers and the environment from radiation exposure

#### ***Recent advice issued***

ARPANSA prepared draft advice during the quarter on the safety of cosmetic treatments using lasers, intense pulsed light (IPL) and light-emitting diode (LED) phototherapy. The advice for consumers and treatment providers was published for comment on the ARPANSA website on the 'Have Your Say' forum on 23 August 2018 (<https://www.arpansa.gov.au/advice-cosmetic-treatments-and-beauty-therapy-using-lasers-intense-pulsed-light-ipl-devices-and-high>). The consultation period was kept open for one month, ending on 23 September 2018. ARPANSA is currently reviewing the comments received.

#### ***Monitor and mitigate population exposures to electric and magnetic fields and electromagnetic radiation***

ARPANSA commenced Australia's first centralised Electromagnetic Radiation (EMR) Health Complaints Register in 2003. The Register collects reports of health concerns related to possible EMR field exposures in the range of 0–300 GHz. Members of the public who believe they have suffered ill-effects as a result of exposure to EMR can lodge a written complaint to the Register. During the quarter, an analysis of EMR Health Complaints Register Data for the period July 2017 – June 2018 was published at <https://www.arpansa.gov.au/research/surveys/electromagnetic-radiation-health-complaints-register>.

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has released its draft high frequency guidelines following public consultation. ARPANSA also continued revising its own *Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields — 3 kHz to 300 GHz* (RF Standard) during the quarter and will consider the ICNIRP guidelines in the revision process. In the meantime the current 2002 edition of the ARPANSA RF Standard provides adequate protection.

## ***Australian National Radiation Dose Register***

ARPANSA maintains the Australian National Radiation Dose Register (ANRDR) which stores and maintains radiological dose histories for occupationally exposed workers in Australia.

The ANRDR holds dose records for around 44 000 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, and the mineral sands mining and processing industry.

After a successful major hospital trial, the ANRDR is now open to the medical sector. ARPANSA will engage with key stakeholders in the medical sector to raise awareness and encourage uptake of the ANRDR, with the ultimate goal to cover all occupationally exposed workers in Australia.

Project work continues on the ANRDR to include regulator and worker online portals, and to make general improvements to the ANRDR.

## ***Management of radioactive waste***

In September ARPANSA published the *Code for Disposal of Radioactive Waste by the User, Radiation Protection Series (RPS C-6)*. This code sets out the levels for disposal to landfill and discharge to sewer and the atmosphere below which no authorisation is required from the relevant regulatory authority. The code was approved by the Radiation Health Committee prior to publication.

## **Promoting radiological and nuclear safety and security, and emergency preparedness**

### ***Emergency preparedness***

ARPANSA met with the Sutherland Shire Council in New South Wales to obtain an update on their development of an off-site emergency response plan for the Australian Nuclear Science and Technology Organisation (ANSTO). It was agreed that ARPANSA would independently review the plan's hazard assessment.

In July, ARPANSA hosted the Victorian Emergency Exposure Guide Forum in Melbourne. The draft of ARPANSA's *Guide for Radiation Protection in Emergency Exposure Situations (RPS G-3)* was presented, in particular highlighting the key differences between the guide and the current guidance found in RPS 7. The forum discussed various radiation emergency scenarios relevant to stakeholders.

ARPANSA, the International Atomic Energy Agency (IAEA) and the United States of America Department of Energy jointly hosted a Radiological Assessors regional training course in Melbourne on 20–24 August 2018. The course content included field monitoring and assessment techniques for use during a nuclear or radiological emergency. Twenty participants from nine countries in the Australasian region included representatives from Cambodia, Indonesia, Malaysia, Myanmar, New Zealand, Philippines, Singapore, Thailand, and Vietnam. There were also participants from all Australian jurisdictions.

Emergency Exercise 'Hail Caesium' was jointly held with the Department of Health on 25 October 2018, with participation from the Department of Home Affairs, Department of Foreign Affairs and Trade, Australian Maritime and Safety Authority, Department of Defence and others. Arrangements were tested for various emergency scenarios involving radiological accidents.



## ***International monitoring system***

As part of Australia's ongoing commitment to the Comprehensive Nuclear-Test-Ban Treaty (CTBT), ARPANSA operates and maintains the Australian CTBT Radionuclide Laboratory in Melbourne and radionuclide air particulate monitoring stations as part of the CTBT International Monitoring System.

Stations are located in Melbourne, Perth, Townsville, Darwin, Cocos Islands, Macquarie Island, and Mawson Base (Antarctica). Two noble gas monitoring facilities are co-located with the air particulate stations in Melbourne and Darwin. Data is provided to the CTBT Organisation on a daily basis.

Data availability during the period July through September 2018 was reported at 98%, averaged across all Australian CTBT stations. The Australian CTBT Radionuclide Laboratory was in service for the entire quarter. Six samples were analysed during this period.

## **Promoting the safe and effective use of ionising radiation in medicine**

During the financial year 2017–18 ARPANSA received a \$5 million capital injection to purchase a modern linear accelerator (linac) and fund associated installation building works. The contract for the linac and building works was signed in March 2018 and work commenced the same month. During this quarter the internal building works, including demolition and foundation strengthening were completed. By future proofing our medical services, the new linac will ensure each radiotherapy patient across Australia receives the optimal dose needed to treat their cancer. This means the Australian public can rest assured that radiation oncology in Australia continues to be of a high quality. Our new linac is being installed in a brand new education suite enabling ARPANSA to complement its research capability with a modern education centre.

### ***Primary Standards Dosimetry Laboratory***

As a part of ARPANSA's regular calibration services for radiotherapy providers and industry users of radiation, ARPANSA calibrated eleven therapy dosimeters for the quarter. In support of these services and the measurement of doses used in radiotherapy, ARPANSA has been developing computer models of the response of common and new radiotherapy detectors. This work will all be submitted to the IAEA working group to inform new dosimetry protocols. During the quarter measurements have been performed on the ten chambers for which ARPANSA has responsibility. Modelling has been completed on two of the ten and all completed outcomes submitted to the IAEA. Modelling on the outstanding eight chambers will be completed and submitted by the end of the year. Once complete, the resulting protocols will be adopted by all providers within Australia to ensure accurate patient dose delivery.

### ***Medical Imaging***

ARPANSA's National Diagnostic Reference Level Service (NDRLS) collects data on patient dose metrics in diagnostic imaging from surveys and uses it to calculate Australian Diagnostic Reference Levels (DRLs) for common multi-detector computed tomography (MDCT) protocols. The size of the data sample collected enhances confidence in the DRLs that ARPANSA sets. A total of 522 survey reports were submitted in the quarter, compared with 388 in the same period last year. Fourteen new registrants signed up to participate.

During the quarter ARPANSA continued to review and respond to public comments on the draft *Code for Radiation Protection in Medical Exposure* (Medical Exposure Code). The Medical Exposure Code outlines requirements for use by state and territory regulators in ensuring appropriate radiation protection in

relation to exposures of patients, including volunteers exposed in medical research and carers assisting in the conduct of a medical exposure. The Medical Exposure Code, in combination with the *Code for Radiation Protection in Planned Exposure Situations (RPS C-1)* (published in 2016), is intended to replace the existing requirements in the *Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (RPS 14)* (published in 2008). During the period for public comment from 23 February 2018 to 25 May 2018, a total of 430 comments were received from 27 respondents. Work is continuing on responding to the comments and revising the draft text. A completed set of responses and a revised text will be circulated to the Radiation Health Committee for approval.

## **Ensuring risk-informed and efficient regulation**

### ***Significant activities***

During the quarter, ARPANSA issued the following regulatory approvals:

- facility licence F0320 was issued to ARPANSA for the construction of a clinical linear accelerator at the existing site in Yallambie
- a regulation 54 request for construction of a shielded door for a clinical linear accelerator bunker at ARPANSA in Yallambie
- approval was granted to construct an item that is important for safety under regulation 54 for the ANSTO Synroc waste treatment plant (facility construction licence F0266). This related to the shielding of the hot cell, bunker, liquid waste flask network, and the ANSTO Nuclear Medicine (ANM) transfer line containment
- the surrender of the construction licence for ANSTO's ANM Mo-99 Facility, following the completion of its construction, and upon issuing an operating licence for the facility.

ARPANSA undertook a transport security inspection at ANSTO. The inspection involved a large shipment of iridium-192. No non-compliances were identified during the inspection.

ARPANSA conducted a site visit of Norfolk Island Health Residential Aged Care Service (NIHRACS). The focus of the site visit was to inspect their facilities and determine the scope of controlled apparatus for a pending licence application. Information sharing sessions were also held where NIHRACS staff were able to ask specific licensing questions of the inspectors.

ARPANSA and Comcare attended an information sharing meeting this quarter to discuss their approach to regulation. A follow up meeting is scheduled for November 2018.

### ***Inspections***

Six planned inspections and fourteen site visits were conducted during the quarter which identified one potential non-compliance and five areas for improvement. The inspection reports can be found on ARPANSA's website at [www.arpansa.gov.au/regulation/inspections/reports](http://www.arpansa.gov.au/regulation/inspections/reports).

### ***Public engagement***

ARPANSA held its annual Licence Holder Forum in Canberra at the Department of Agriculture and Water Resources on 29 September 2018 with the highest attendance to date. The feature topic of the forum was 'risk' since recent ARPANSA inspection findings in particular suggested that risk management, and the effectiveness of risk communication to workers, deserved more attention.

## ***Streamlining regulation***

The *National Directory for Radiation Protection* (NDRP) 2nd Edition was released for public consultation. The purpose of the NDRP is to provide an agreed framework for radiation safety, including both ionising and non-ionising radiation, together with clear regulatory statements to be adopted by the Commonwealth, States and Territories.

Consultation on the draft *Guide for Radiation Protection in Emergency Exposure Situations (RPS G-3)* ended on 16 July 2018. Stakeholders' comments are in the process of being resolved.

Stakeholders' comments received on the draft *Code for Radiation Protection in Medical Exposure (RPS C-5)* are also in the process of being resolved.

ARPANSA met with the Department of the Environment and Energy to establish how their regulatory approval processes will interact with ARPANSA's for the proposed National Radioactive Waste Management Facility (NRWMF). ARPANSA also met with the Department of Industry, Innovation and Science on the detailed business case and other technical matters related to the NRWMF.

## ***Radioactive material import and export permits***

The importation and exportation 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.

ARPANSA approved 55 urgent permits, 62 standard permits, and two 12-month permits for non-medical radioisotopes. Eleven permits to export high activity radioactive sources were approved.

## ***Transport of radioactive material***

ARPANSA endorsed three transport security plans for the transport of radioactive material.

ARPANSA approved the shipment of Open Pool Australian Lightwater (OPAL) reactor spent fuel from the ANSTO's Lucas Heights site to a New South Wales port, and issued a shipment approval certificate to ANSTO.

ARPANSA validated a Package Design certificate issued by France's Competent Authority and issued a revised validation certificate to ANSTO. The package will be used for transporting OPAL fresh fuel.

## **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. The following is a summary of key international engagement activities undertaken in this quarter.

***45<sup>th</sup> Meeting of the IAEA Waste Safety Standard Committee (WASSC) 2–5 July 2018, Vienna, Austria***

ARPANSA attended this meeting which focussed on the next three-year work plan and the development and publication of various IAEA safety guides. The safety standards in these guides will be very useful for the regulatory management of radioactive waste in Australia, and incorporation of these documents in ARPANSA's Radiation Protection Series to strengthen national uniformity in the regulatory framework across Australian jurisdictions. The strategic work priorities of WASSC complement and support ARPANSA's work program in developing and applying radioactive waste safety standards as part of national uniformity program especially for safe management of radioactive waste in Australia. This travel was funded by ARPANSA.

***Technical Meeting: drafting of Safety Guide 'Remediation Process for Areas with Residual Radioactive Material from Past Practices and Accidents' with co-sponsors, 23–27 July 2018, Vienna, Austria***

ARPANSA was invited to chair this meeting, organised by the IAEA to invite international organisations to co-sponsor the IAEA draft Safety Guide DS468 on 'Remediation Process for Areas with Residual Radioactive Material from Past Practices and Accidents'. Potential joint sponsors include the European Commission, the Food and Agriculture Organization of the United Nations, the IAEA, the International Labour Office and the Organisation for Economic Co-operation and Development (OECD) Nuclear Energy Agency. ARPANSA has contributed to finalising this draft by using its recent experience developing the Australian national standard *Guide for Radiation Protection in Existing Exposure Situations (RPS G-2)* through its role in overseeing the successful remediation of the former British nuclear weapons test site at Maralinga, South Australia, and its role with UNSCEAR in helping develop and promote improved communication tools to better explain radiation risk to the public. The IAEA funded this travel.

***IAEA Regulatory Review Mission on the finalisation of DRAFT Regulations on Transport Security in The Socialist Republic of Vietnam, 11–17 August 2018, Hanoi, Vietnam***

ARPANSA participated in this mission with the purpose to workshop the review findings with staff from Vietnam's Agency for Radiation and Nuclear Safety and the Ministry of Science and Technology who in turn, will seek to improve on the current legislation and regulatory material within the country. The IAEA funded this travel.

***51<sup>st</sup> Session of the Comprehensive Test Ban Treaty Organisation (CTBTO) Working Group B, 27 August to 1 September 2018, Vienna, Austria***

ARPANSA participated in this meeting which discussed technical issues related to the CTBT, including sessions on capacity building, technology refreshment, testing, provisional operations and performance assessment. The travel was funded by ARPANSA.

***62<sup>nd</sup> Annual International Atomic Energy Agency General Conference***

ARPANSA attended the 62nd Regular Session of the IAEA General Conference, 17–21 September. The Australian delegation was led by the Head of Mission in Vienna, Ambassador Hammer, who also delivered the Australian statement to the Conference. Resolutions were passed in a number of important areas of safety, security, safeguards, technical cooperation, DPRK and other. ARPANSA held a series of bilateral meetings with counterparts in the region (Thailand, Singapore) and other countries and bodies

(e.g. US, Spain, Finland, Canada, Sweden, UK, Norway, the Netherlands). ARPANSA signed two new cooperative agreements, one with the Dutch nuclear safety regulator, and one with the Thai Office of Atoms for Peace. It also gave an opportunity to discuss ongoing cooperation with the IAEA itself, including preparations for the Integrated Regulatory Review Service Mission to Australia in November 2018 and on cooperation and information sharing between the two agencies. The travel was funded by ARPANSA.

## **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 of ARPANSA under section 41(1A) of the Act.

## **Details of improvement notices given by inspectors**

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

## **Details of any breach of licence conditions by a licensee**

Five breaches with minor safety implications were recorded in the quarter. Two breaches were related to non-compliance with facility licence conditions, and three for non-compliance with the organisation's own plans and arrangements.

Two breaches were identified with significant safety implications this quarter. One of the breaches was found as a result of a spill of radioactive liquid at ANSTO Health, due to the ineffective safety management of the process involving transport of a Molybdenum-99 quality control sample. The second breach was at ANSTO's Camperdown campus where they failed to meet transport requirements, as required by ANSTO procedures and the *Code for the Safe Transport of Radioactive Material (RPS C-2)* (Transport Code).

## **Facilities licensed under Part 5 of the ARPANS Act**

During the quarter a construction licence was issued to ARPANSA Medical Radiation Services for a clinical linear accelerator. For more details, see significant licensing details.

## **The operations of the Council and Committees**

### **Radiation Health and Safety Advisory Council**

The Radiation Health and Safety Advisory Council (the Council) did not meet during the quarter. The terms of seven members of the Council, including the Chair, expired on 30 June 2018.

The minutes of past meetings are on ARPANSA's website at [www.arpansa.gov.au/rhsac](http://www.arpansa.gov.au/rhsac). The next meeting is scheduled for 11 October 2018 in Sydney.

### **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 17–18 July 2018 in Hobart.

Members noted the current projects and activities and agreed to sponsor the project on the regulatory impact assessment requirements and exemption provisions in each jurisdiction in order to facilitate the implementation of RPS Codes in each jurisdiction.

The RHC endorsed the NDRP 2nd edition in principle, subject to the incorporation of changes agreed at the meeting. The updated NDRP will be circulated to Members out of session for confirmation, followed by submission to the Australian Health Ministers' Advisory Council and the COAG Health Council.

Members advised ARPANSA to explore options for a joint Australian and New Zealand publication of Radiation Protection Standard for *Maximum Exposure Levels to Radiofrequency Fields — 3 kHz to 300 GHz (2002) (RPS-3)*. Members approved the *Code for Disposal Facilities for Solid Radioactive Waste (RPS C-3)*, incorporating suggested amendments for publication.

Members approved, in principle, a funding model for the development of ANRDR regulator access, subject to the negotiation of a Memorandum of Understanding between all jurisdictions.

Members endorsed the impact of changes in the 2018 Edition of the *Code for Safe Transport of Radioactive Material (RPS C-2)*, and the Office of Best Practice Regulation Preliminary Assessment of the revision of RPS C-2 adopting the 2018 Edition of the IAEA Safety Standard SSR-6 (Rev.1).

Members advised ARPANSA to submit a paper on the proposed actions to reinstate the national sealed source register at the next RHC meeting in October 2018.

Members approved the re-establishment of the working group to complete the development of a national accreditation system for personal dosimetry service providers.

Further information can be found in the meeting minutes which are provided online at [www.arpansa.gov.au/rhc](http://www.arpansa.gov.au/rhc).

## **Nuclear Safety Committee**

The Nuclear Safety Committee (NSC) did not meet during this quarter.

The minutes of past meetings are provided online at [www.arpansa.gov.au/nsc](http://www.arpansa.gov.au/nsc). The next meeting of the NSC is scheduled for 2 November 2018 in Miranda.

### ***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.