Australian Government

Australian Radiation Protection and Nuclear Safety Agency

arpansa

# Quarterly Report

# of the

# Chief Executive Officer of ARPANSA

# July to September 2017

Australian Government

Australian Radiation Protection and Nuclear Safety Agency

arpansa

# Quarterly Report

# of the

# Chief Executive Officer of ARPANSA

# July to September 2017

**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**.

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.

**Printed by:**

CanPrint Communications Pty Ltd
16 Nyrang Street
Fyshwick ACT 2609

# Table of contents

This page has been left blank intentionally.

# Letter of transmittal

31 October 2017

The Hon Dr David Gillespie MP
Assistant Minister for Health
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 (the NSC) and the Radiation Health Committee (the RHC)
- details of any direction given by the Minister to the CEO under section 16 of the Act
- details of any direction given by the CEO under section 41 of the Act
- details of improvement notices given by inspectors under section 80A of the Act
- any breach of licence conditions by a licensee, of which the CEO is aware
- 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
- the 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 2017.

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

ARPANSA sits within the Department of Health portfolio.

ARPANSA has a single outcome, as set out in the 2017 18 Portfolio Budget Statements (2017-18 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 2017-18 PBS, describes four performance criteria, 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, and
- ensuring risk-informed and efficient regulation.

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

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

### *Australian National Radiation Dose Register*

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

The ANRDR holds dose history records for more than 38 000 workers. This includes full coverage of workers from all 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.

ARPANSA is working to expand the ANRDR, with a goal to ultimately include all occupationally exposed workers. During the quarter, the ANRDR team consulted with jurisdictional representatives from the Radiation Health Committee (RHC) on approaches to have the RHC approve the ANRDR as a central record keeping agency, as defined in the *Code for Radiation Protection in Planned Exposure Situations* (Radiation Protection Series (RPS) C-1). If approved, it would establish a legal framework for the submission of dose records from organisations operating under State and Territory regulatory control, in accordance with *Planned Exposure Code* (RPS C-1).

The ANRDR team continued to work with Commonwealth licence holders for whom the submission of dose records to the ANRDR is now a mandatory requirement. Each organisation has implemented work required for the submission of their dose records within reasonable timeframes.

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

ARPANSA presented a guest session at an Engineers Australia event on 28 June 2017 in Melbourne, to increase engineers' awareness on the state of the science on low frequency and radiofrequency fields and health.

The electromagnetic radiation (EMR) Health Complaints Register has received 161 reports since its commencement, and during the period of 2016-2017 a total of six reports were received. An analysis of the EMR Health Complaints Register Data can be found at www.arpansa.gov.au/research/surveys/electromagnetic-radiation-health-complaints-register.

### *Solar ultraviolet radiation and sun protection*

ARPANSA measures solar ultraviolet radiation (UVR) at eleven sites around Australia and four sites in the Australian Antarctic territories. During this quarter, ARPANSA continued the replacement of infrastructure around Australia. Currently, four of the mainland stations have had its infrastructure replaced. The UVR index data generated by the network is used to raise awareness in Australia of the levels of UVR exposure and the risks associated with excessive sun exposure.

### *Standards development*

The Australian and New Zealand Standard *AS/NZS 4399:2017 Sun Protective Clothing – Evaluation and Classification* has been revised and was published on 7 September 2017. The revised standard adopts minimum body coverage requirements for sun protective clothing, with garments requiring three-quarter length sleeves for both clothing tops and three-quarter length leg coverage towards the knee for shorts.

An ARPANSA expert chaired the Standards Australia Committee TE-007 – Human Exposure to Electromagnetic Fields. The committee met this quarter to formally begin the project to amend *AS/NZS 2772.2 Radiofrequency fields, Part 2: Principles and methods of measurement and computation - 3 kHz to 300 GHz*. The amendment will more fully harmonise the standard with the international standard IEC 62232 and ensure that the Australian standard keeps pace with international best practice.

## Ensure radiological and nuclear security, and emergency preparedness

### *Security of nuclear facilities, radioactive material and associated facilities*

ARPANSA attended an annual stakeholder day hosted by the Australian Defence Force Special Operations Command. This activity reinforced Australian Government capabilities and arrangements to prevent and prepare for nuclear and radiological security events.

### *International monitoring system*

As part of Australia's ongoing commitment to the Comprehensive Nuclear-Test-Ban Treaty (CTBT), ARPANSA operates and maintains radionuclide air particulate monitoring stations that are part of the CTBT International Monitoring System. Stations are located in Melbourne, Perth, Townsville, Darwin, the Cocos Islands, Macquarie Island, and Mawson Base (Antarctica). Two noble gas monitoring facilities are co-located with air particulate monitoring stations in Melbourne and Darwin.

The Australian CTBT Radionuclide Laboratory was in service for the entire quarter. Eight samples were analysed during this period.

### *Emergency preparedness*

ARPANSA participated in Exercise Pacific Protector 2017 from 6-9 September 2017 in Cairns. This was part of the Proliferation Security Initiative, a global effort aimed at countering weapons proliferation. Over 100 participants from 20 countries took part, with ARPANSA staff delivering demonstrations and training on external container assessment and gamma analysis and modelling.

A debrief on the outcomes and lessons learned from the International Atomic Energy Agency (IAEA) level three Convention Exercise (ConvEx 3), reported last quarter, was undertaken in Canberra. This included participants from other Government departments involved in the exercise.

## Promote the effective use of ionising radiation in medicine

### *Radiotherapy*

As a part of the ARPANSA Radiotherapy section's regular calibration services for radiotherapy providers and industry users of radiation, ARPANSA calibrated six therapy dosimeters. On-site source output measurements were made for one provider of irradiation services.

### *Australian Clinical Dosimetry Service*

The Australian Clinical Dosimetry Service (ACDS) provides radiation specialists with a source of independent checks for equipment and patient doses. This enables an integrated national approach to promoting safety and quality in radiotherapy, which is expected to lead to further improvements in radiotherapy treatment outcomes. The ACDS transitioned to a full cost recovery user-pays service on 1 January 2017 and is in the process of negotiating service level agreements with radiotherapy facilities. Sixty-one percent of Australian facilities have subscribed to the user-pays model of the ACDS and another 15 per cent are finalising their service agreements. During this quarter, the ACDS completed 15 audits of radiotherapy equipment. In September, the ACDS went live with the new Volumetric Modulated Arc Therapy technologies in our Level II audit.

### *Medical Imaging*

ARPANSA's National Diagnostic Reference Level Service collects data 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 via the surveys improves the confidence in the DRLs that ARPANSA sets. The National Diagnostic Reference Level Service has logged 871 completed surveys for computed tomography procedures for the calendar year to date. This is a 25 percent increase over the previous year and the highest for this period in any year since the service commenced in 2011. Over 500 additional surveys submitted by a major radiology network are awaiting bulk processing for upload to the database. An extra 171 sites have registered for the service so far in 2017, bringing total registrations to 544 sites and 711 scanners in 2017.

A new draft revised Medical Exposure Code, along with an updated gap analysis comparing it to the existing codes and responses to previous comments, was circulated to state and territory regulators.

## Ensure effective and proportionate regulation and enforcement activities

### *Regulatory guides*

Radiation Protection Series (RPS) G-2 *Guide for Radiation Protection in Existing Exposure Situations* was published in this quarter. This Guide sets out the Australian approach to protection of occupationally exposed persons, the public and the environment in situations of radiation exposure that already exist when a decision on the need for control is taken. Existing exposure situations include situations of elevated exposure to radiation of natural origin. They also include situations of exposure due to residual radioactive material that derives from past practices that were not subject to regulatory control or that remain after an emergency exposure situation.

### *Significant licencing activities*

ARPANSA received a licence application in April 2017 from the Australian Nuclear Science and Technology Organisation (ANSTO) to operate the ANSTO Nuclear Medicine (ANM) Facility. A draft Regulatory Assessment Report for this licence application has been prepared.

Approvals under regulation 51, which is for CEO ARPANSA approval for certain license changes, were granted to ANSTO to:

1. Increase the radioactive waste volume in the ANSTO Health waste tanks
2. Modify ANSTO Health's Operational Limits and Conditions for the hot cell holding activity limit
3. Modify the design of the plant and equipment, layout and process of ANSTO's SyMo facility.

### *Inspections*

During the quarter, ARPANSA completed eight inspections of sources and facilities and undertook 23 site visits. The inspection reports can be found on ARPANSA's website at www.arpansa.gov.au/regulation/inspections/reports.cfm.

During the quarter, ARPANSA was notified of an accident at ANSTO Health under Regulation 46, involving the personal contamination to the hands of an employee which resulted in an extremity dose exceeding the annual statutory dose limit of 500 mSv. This event was subsequently rated at level 3 on the International Nuclear and Radiological Event Scale which equates to a serious incident. Investigations are currently underway and more information will be published in ARPANSA's forthcoming Quarterly Reports.

### *Stakeholder engagement*

On 22 August 2017, ARPANSA delivered a presentation on its role in the proposed National Radioactive Waste Management Facility to a Community Consultation Meeting organised by the Department of Industry Innovation and Science (DIIS) in Hawker, South Australia.

ARPANSA met with ANSTO to review the last quarter activities for the OPAL reactor, ANSTO Waste Operations, ANSTO Health and the ANSTO Nuclear Medicine Facility. ARPANSA also attended a meeting at ANSTO on OPAL fuel management and shipment strategies.

### *Radioactive material import permits*

The importation of radioactive material into Australia requires permission under Regulation 4R of the Customs (Prohibited Imports) Regulations 1956. These regulations are made under the *Customs Act 1901*. Under the Customs (Prohibited Imports) Regulations 1956, the Minister for Health may authorise ARPANSA officers to issue import permits.

ARPANSA's-authorised officers approved 115 permits for non-medical radioisotopes in the form of 62 urgent permits, 50 standard permits and 3 one year permits.

ARPANSA's-authorised officers approved 182 permits for medical radioisotopes in the form of 12 one-year permits and 170 single shipment permits.

Eleven export permits were approved.

### *Transport of radioactive material*

ARPANSA endorsed three security plans for transport of radioactive material.

ARPANSA validated the design of a transport package and issued the validation certificate for this package that will be used to transport iradiated OPAL fuel and irradiation target materials from overseas.

## International engagement

ARPANSA's international engagement provides the agency with the means of influencing the international radiation protection and nuclear safety and security framework. ARPANSA's regulatory framework and radiation protection standards are based on international risk assessments and best practice. It strengthens ARPANSA's engagement with domestic stakeholders in order to grow awareness and collaboration on national interests and policy objectives. The following is a summary of key international engagement activities undertaken in this quarter.

Technical meeting to review and revise IAEA safety guides and related reports on leadership management for safety and safety culture, and the research coordination meeting on organisational cultural basis for successful performance in nuclear power plants, 4-12 July 2017, Vienna, Austria

ARPANSA attended these meetings which presented experiences in implementing and regulating against the General Safety Requirements (GSR) publication *Leadership and Management for Safety* (GSR Part 2) and research into the effect of organisational culture on safety and performance. This included requirements on Integrated Management Systems, safety culture, and knowledge management. These are all areas where APRANSA is implementing changes, and which are assessed in the regulation of ARPANSA's licence holders. ARPANSA funded this travel.

### *34th Meeting of the IAEA Transport Safety Standard Committee (TRANSSC) 10-13 July 2017, Vienna, Austria*

ARPANSA attended this meeting which focussed on finalising the revision of a key safety requirement and guides. The safety requirements are currently adopted as part of the *Code of Practice for the Safe Transport of Radioactive Material* (RPS C-2, ARPANSA 2014) and compliance with this Code is a Commonwealth

regulatory requirement. The related safety guides will also facilitate harmonisation in regulatory assessment in an Australian domestic context. ARPANSA funded this travel.

### *IAEA International Training Course of New and Prospective Points of Contact for the Incident and Trafficking Database (ITDB) , 24-28 July 2017, Vienna, Austria*

ARPANSA participated as a sponsored expert to assist the IAEA deliver this course, which aimed to strengthen national, regional and international capacity to prevent and combat illicit trafficking in nuclear and other radioactive material. It provided specific training to new national points of contact for the ITDB on their roles and tools used by the ITDB programme. The IAEA funded this travel.

### *61st Regular Session of IAEA General Conference, 18-22 September 2017, Vienna, Austria*

ARPANSA's CEO and key staff attended as part of an Australian delegation, led by Australia's Head of Mission in Vienna. Resolutions were passed in a number of important areas, including safety, security, safeguards, and technical cooperation. ARPANSA held a series of bilateral meetings with regional counterparts (Indonesia, New Zealand, Vietnam, Thailand, Singapore) and other countries and bodies (US, Spain, Norway, Finland, Canada, Germany, EURATOM). A number of opportunities were presented to strengthen existing cooperative arrangements and establish new arrangements. ARPANSA discussed ongoing cooperation with the IAEA, including preparations for the Integrated Regulatory Review Service Mission to Australia in 2018. In direct connection with the General Conference, ARPANSA also visited Singapore on 25-26 September to sign a memorandum of arrangement with the National Environment Agency, to allow cooperation and information sharing between the two agencies. ARPANSA funded this travel.

### *IAEA Consultancy Meeting on the Revision of Safety Guide WS-G-3.1 on Remediation Process for Areas Affected by Past Activities and Accidents [DS468], 7-11 August 2017, Vienna, Austria*

ARPANSA participated as an expert in this meeting to address Member State comments on this Safety Guide and incorporate case study annexes, including a case study on lessons learned from the remediation of the former British nuclear test site at Maralinga. The IAEA funded this travel.

### *IAEA Regional Training Course on Building Capacities for Nuclear Security, 14-18 August 2017, Beijing, China*

ARPANSA participated in this regional course to provide guidance on developing national capacity building strategies for establishing, implementing and sustaining an effective nuclear security regime. Aimed at regional regulatory bodies in the Middle East, South Asia, and South-East Asia, it helped to build competence and capability within these bodies on nuclear security. The IAEA funded this travel.

### *IAEA/RCA Regional Training Course on Sampling and Basic Analytical Techniques, 16-25 August 17, Jakarta, Indonesia*

ARPANSA is part of an Australian team supporting an IAEA Regional Cooperative Agreement (IAEA/RCA) on Enhancing Regional Capabilities for Marine Radioactivity Monitoring and Assessment of the Potential Impact of Radioactive Releases from Nuclear Facilities in the Asia-Pacific Marine Ecosystem. ARPANSA participated as an expert in this workshop focused on the harmonisation of sample collection and

radiochemical techniques. There were 15 participants from 13 different countries plus additional Indonesian participants. The IAEA funded this travel.

***49th Session of the Comprehensive Nuclear Test Ban Treaty Organisation (CTBTO) Working Group B (WGB), 20 August – 1 September 2017, Vienna, Austria***

This meeting of CTBTO WGB Member State representatives discussed technical issues related to the CTBT. ARPANSA staff joined staff from Geoscience Australia and the Australian Safeguards and Non-proliferation Office. The meeting included sessions on capacity building, technology refreshment, testing, provisional operations and performance assessment. ARPANSA funded this travel.

## 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

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

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

Three minor breaches were identified with low safety significance: two licence holders disposed of controlled apparatus without seeking prior approval from ARPANSA. One licence holder did not follow their plans and arrangements for managing safety.

One significant breach was identified. The Department of Immigration and Border Protection (DIBP) had possession of controlled apparatus without a licence.

## 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) did not meet during the quarter. The minutes of the 5-6 June 2017 meeting are on ARPANSA's website. The next meeting is in Sydney on 16-17 November 2017.

## 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) did not meet during the quarter. The minutes of the 7 June 2017 meeting are on ARPANSA's website. The next RHC meeting is in Sydney on 15 November 2017.

## Nuclear Safety Committee

The Nuclear Safety Committee (NSC) did not meet during in the quarter. The minutes of the 30 June 2017 meeting in Sydney is on ARPANSA's website. The next meeting is in Sydney on 20 October 2017.

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.