



Australian Government

**Australian Radiation Protection
and Nuclear Safety Agency**

Quarterly Report

of the

Chief Executive Officer of ARPANSA

January to March 2016

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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. ARPANSA regulates Commonwealth entities using radiation with the objective of protecting people and the environment from the harmful effect of radiation. ARPANSA undertakes research, provides services, and promotes national uniformity and the implementation of international best practice across all jurisdictions.

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Letter of transmittal

30 August 2016

The Hon Sussan Ley MP
Minister for Health and Aged Care
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
- 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 January to 31 March 2016.

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 is an agency within the Department of Health portfolio focused on delivering the outcome and programme described in its Portfolio Budget Statement.

Outcome for the Australian community:

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

To deliver this outcome, the agency undertakes a planned set of activities collectively referred to as the **Radiation Protection and Nuclear Safety programme**.

This programme is made up of four components:

- protect the public, workers and the environment from radiation exposure
- ensure radiological and nuclear security, and emergency preparedness
- promote the effective use of ionising radiation in medicine, and
- ensure effective and proportionate regulation and enforcement activities.

The report on the operations of the CEO and ARPANSA is based on these components.

Protect the public, workers and the environment from radiation exposure

Australian National Radiation Dose Register (ANRDR)

ARPANSA maintains the Australian National Radiation Dose Register (ANRDR) which collects, stores and reviews radiological dose histories for occupationally exposed workers in Australia. The Dose Register receives worker dose records from all four uranium mines that are licensed to operate in Australia: Olympic Dam, Beverley and Honeymoon in South Australia, and Ranger in the Northern Territory. The ANRDR currently holds dose history records for more than 35,000 workers from the uranium mining and milling industry, the mineral sands mining and processing industry and Commonwealth licence holders. ARPANSA is continuing to expand the ANRDR to include occupationally exposed workers in other industries, such as the aviation sectors.

Monitor and Mitigate Population Exposures to Electric and Magnetic Fields and Electromagnetic Radiation

In February 2016, the Australian Broadcasting Commission aired an episode of the programme Catalyst titled 'Wi-Fried', focusing on the potential health effects of radiofrequency (RF) electromagnetic energy (EME) from mobile phones and Wi-Fi devices. An ARPANSA expert in RF EME was interviewed for the episode and provided an explanation of the current scientific evidence regarding the potential harmful effects of RF EME.

Solar Ultra Violet Radiation and Sun Protection

Currently ARPANSA measures solar ultraviolet radiation (UVR) at 11 sites around Australia and during this quarter, ARPANSA installed additional data logging and UV detectors at the Darwin site as part of continuing trials of new equipment. The UV Index data generated by the network is used to raise awareness in the Australian population of the levels of UV exposure and the risks associated with excessive sun exposure.

Standards Development

During this quarter, ARPANSA, working with Standards Australia, led the drafting work to update *AS/NZ 2243.4 Safety in Laboratories: Ionising Radiation*. The Standards Australia Technical Committee has reviewed the draft document which, subject to committee approval, will be released for community comment in the second quarter of 2016.

The Australian Government is implementing one of the major recommendations of the Spectrum Review; namely, to replace the current *Radiocommunications Act 1992* with new legislation that is streamlined, consistent and outcomes focussed. During this quarter, ARPANSA provided the Department of Communications and the Arts with feedback on the recommendation and the development of the proposed legislation. As a public safety body, ARPANSA is responsible for providing community advice as well as publishing codes and standards in the field of non-ionising radiation, which includes devices and equipment that would most likely be subject to the proposed legislation.

During this quarter, an ARPANSA expert chaired the Standards Australia Committee TE-007 – Human Exposure to Electromagnetic Fields. The Committee is drafting a joint Australian and New Zealand Standard *AS/NZS 2772.2 Radiofrequency fields – Part 2: Principles and methods of measurement and computation – 3 kHz to 300 GHz*. The Committee considered and resolved comments about the Standard received during the public consultation and submitted a revised draft to Standards Australia for internal editing.

During this quarter, an ARPANSA expert participated in the Standards Australia Committee revising the Australian and New Zealand Standard *AS/NZS4399 Sun Protective Clothing*. ARPANSA also provided expert advice to Standards Australia on the proposal to change the UV wavelength upper limit to 380 nm from 400 nm in the Australian and New Zealand Standard *AS/NZS1067 Sunglasses and Fashion Spectacles*.

Ensure radiological and nuclear security, and emergency preparedness

Security of Radioactive Material

During the quarter, ARPANSA conducted an assessment of the implementation of the 2007 recommendations in the Council of Australian Governments' 'Report on the Regulation and Control of Radiation Sources' (the COAG Report) by state and territory regulators. A high level of support for and implementation of the COAG recommendations was noted, in particular for the Code of Practice for the Security of Radioactive Sources (RPS-11). The assessments also provided a 'snapshot' of

jurisdictions' scope of operations and issues faced, as well as the types of applications and use of radioactive sources across the country.

International Monitoring Network

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

During the quarter, ARPANSA continued to operate the Australian CTBT Radionuclide Laboratory which is a certified laboratory for the analysis of air particulate samples. A total of six samples were analysed by the laboratory this quarter.

Emergency Preparedness

During the quarter, ARPANSA participated in an International Atomic Energy Agency (IAEA) international ConvEx-1A exercise. The aim of this type of exercise is to test access to the IAEA communication website, which is used to exchange urgent information during nuclear and radiological incidents and emergencies and to post information on radiological events. This exercise also served to test components of ARPANSA's own emergency preparedness and response plans.

Promote the effective use of ionising radiation in medicine

Calibration Services

As a part of the Agency's regular calibration services for radiotherapy providers and industry users of radiation, ARPANSA calibrated five survey meters, three electrometers and three ionisation chambers in the current quarter.

A new kilovoltage X-ray irradiator, used to calibrate radiotherapy equipment, was installed in 2015. Radiotherapy calibration services with this unit commenced in March 2016.

Australian Clinical Dosimetry Service

The Australian Clinical Dosimetry Service (ACDS) is a joint initiative between the Department of Health and ARPANSA to provide 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. During this quarter, the ACDS finalised 15 audits of radiotherapy equipment which met the audit target frequency agreed to with the Department of Health.

Medical Imaging

ARPANSA has engaged an experienced diagnostic imaging medical physicist to organise and conduct experimental work utilising the digital radiography/fluoroscopy unit and to establish and validate procedures for calibrating measuring equipment for diagnostic radiology using the agency's new X-ray irradiator. Work continues to improve the on-line web portal for the National Diagnostic Reference Level Service which is used for data collection and reporting to diagnostic imaging facilities in multi-detector computed tomography. ARPANSA has also undertaken extensive consultation with a range of stakeholders across industry to guide the development and promulgation of education material on radiation protection for use by medical practitioners.

Stakeholder Engagement

During this quarter, the ACDS held a third stakeholder engagement meeting with jurisdictional, professional and patient representatives. The ACDS auditing outcomes and clinical recommendations to radiotherapy facilities were presented to the meeting and were reviewed. The planned audit developments and on-going role for the ACDS were also discussed and modifications for some protocols recommended.

Ensure effective and proportionate regulation and enforcement activities

ARPANSA established a Trusted International Standards (TIS) Register to promote the Australian Government's 'trusted international standards' principle. This principle aims to avoid duplication, promote efficiency and uniformity, and reduce unnecessary regulatory burden for any system, service or product already approved under a trusted international standard or risk assessment. Although the principle refers to 'trusted international standards', ARPANSA's application of this principle is to all codes, standards, fundamentals, and guides produced by relevant international agencies, so the term 'standards' is applied to any type of document listed in the TIS Register.

Significant Licensing Activities

Approvals were given for:

- Australian Nuclear Science and Technology Organisation (ANSTO) to surrender the construction licence (F0287) for the SIRIUS 6 MV accelerator.
- The Australian Synchrotron (F0271) to install a diagnostic imaging X-ray unit on the Medical Beam Line.
- ANSTO to undertake preparatory work for radiological characterisation under Licence Condition 1 of the High Flux Australian Reactor (HIFAR) possess or control licence (F0184).
- Department of Defence to surrender its licence (F0299) to possess or control an industrial radiography unit.
- ANSTO Health (F0262) to transport 12 irradiated target plates from the Open Pool Australian Lightwater (OPAL) reactor to Building 54 as part of the ANSTO Health Molybdenum-99 capacity increase project. The previous authorisation was for transport of 8 irradiated target plates.

Inspections

During the quarter, ARPANSA completed 16 inspections and 20 site visits in accordance with its Regulatory Delivery Model. Inspection reports are posted on the ARPANSA website at: www.arpansa.gov.au/regulation/inspections.

No license holders inspected during the quarter were found to be non-compliant, although 46 performance deficiencies were identified. These findings were provided to the licence holder to support continuous improvement. Inspection outcomes are reviewed and trends identified to inform the future inspection programme.

Stakeholder Engagement

ARPANSA held two licence holder forums - one in Canberra on 16 March 2016 hosted by the CSIRO, and the second in Sydney on 17 March 2016. These events were an opportunity for licence holders to meet with ARPANSA staff and other licence holders, share experiences, and discuss issues of regulatory interest or concern. Both forums were facilitated by Ms Susan Fleming from Acting Consulting and Training (ACT) Australia, which uses theatre-based workshops to highlight real scenarios with radiation safety and regulatory issues; in this case engaging the audience in discussion on the causes and consequences of the Fukushima Daiichi nuclear power plant accident in 2011. Keynote speakers were Dr Adrian Paterson, CEO of ANSTO and Dr John Loy, former CEO of ARPANSA.

Licences

Officers from ARPANSA's Regulatory Services Branch met with representatives from ANSTO's OPAL Reactor Operations to review the OPAL Quarterly Report covering the period 1 October – 31 December 2015.

Regulatory Documents

ANSTO, the Australian Safeguards and Non-Proliferation Office (ASNO) and the Nuclear Safety Committee were consulted on the draft Regulatory Guide 'Periodic Safety and Security Review of Research Reactors' (a joint ARPANSA/ASNO publication). The guide will be finalised and published in the next quarter.

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 approve import permissions.

During this quarter, ARPANSA authorised officers issued 134 non-medical radioisotope permits including: 75 urgent permits, 47 standard permits and 12 twelve-month permits.

During this quarter, ARPANSA authorised officers issued 190 permits for medical radioisotopes including zero urgent permits, eight twelve-month permits and 182 single shipment permits.

International engagement

ARPANSA's international engagement provides the Agency with the means of influencing the international radiation protection and nuclear security and safety framework, and strengthens our 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 the current quarter.

IAEA-coordinated Integrated Regulatory Review Service Mission (IRRS) to Japan 10-22 January 2016

The CEO of ARPANSA participated as Deputy Team Leader in the review, which focused on the regulatory activities of the newly (2012) established Nuclear Regulation Authority (NRA). While the review found the establishment of the NRA as an independent and transparent regulator has been accomplished expediently and led to significant improvements, it highlighted priority areas for improvement including staff training and development; improvement of inspection processes; and promotion of safety culture, including by fostering a questioning attitude. NRA intends to invite a follow-up mission in 2-3 years. Participation in this mission was partly funded by IAEA.

4th Technical Meeting of IAEA PRISMA, Vienna, Austria from 18-22 January 2016

ARPANSA attended this meeting on the Practical Illustration and Use of the Safety Case Concept in the Management of Near-Surface Disposal (PRISMA) project. Key outcomes from the meeting were the development of Matrix of Arguments for the Safety Case (MASC) matrices, for the construction, operation and closure stages of a licence application for a near surface radioactive waste disposal facility. This travel was funded by ARPANSA.

APEX GOLD Ministerial Level Scenario-Based Policy Discussion Exercise, Livermore California, USA, 25-28 January 2016

ARPANSA participated in this exercise which is considered a complex Nuclear Security Event with trans-national implications. Australia participated along with several other countries. This travel was funded by ARPANSA.

World Health Organization (WHO) Steering Committee on the Fundamental Safety Principles for Protection against Non-Ionising Radiation, London, United Kingdom, 2-4 February 2016

ARPANSA participated in a meeting of the WHO Steering Committee responsible for developing the 'Fundamental Safety Principles for Protection against Non-Ionizing Radiation' publication. The Steering Committee completed the review of the final draft of the document in preparation for release to Member States. Participation in this WHO initiative provides an opportunity for Australia to contribute to WHO health policy and to set international best practice in this area. This travel was funded by the WHO and ARPANSA.

Enhancing Regional Cooperation on Emergency Preparedness and Response in South East Asia, Kuala Lumpur, Malaysia, 17-19 Feb 2016

ARPANSA attended the International Dissemination Workshop where the findings from the European Commission Joint Research Centre (JRC) feasibility study were presented. Key outcomes were an Association of South East Asian Nations (ASEAN) EPR Strategy and Action plan and an International Atomic Energy Agency (IAEA)-ASEAN Technical Cooperation project. This travel was funded by European Commission JRC.

Preparatory meeting for the planned IAEA Integrated Regulatory Review Service (IRRS) mission to Estonia in September 2016, Tallinn, Estonia 24-25 Feb 2016

ARPANSA attended the preparatory meeting in its capacity as team leader. The meeting focused on the matters to be agreed between the IAEA and the host country on the scope of the mission and the preparatory activities to be undertaken prior to the mission. The travel for the meeting was partly funded by the IAEA.

46th Session of the Comprehensive Test Ban Treaty Organisation (CTBTO) Working Group B, 23 February to 3 March, 2016, Vienna, Austria

ARPANSA participated as part of a delegation which also included representatives from ASNO and Geoscience Australia. Working Group B brings together Member State representatives to discuss technical and operational issues related to the CTBTO's International Monitoring System (IMS).

ARPANSA's participation assists Australia in meeting its treaty obligations including the operation of atmospheric radionuclide measurement stations (seven particulate and two noble gas stations, and a radionuclide laboratory). ARPANSA is the third largest operator of radionuclide stations across the IMS. The meeting received updates on topics including station performance, logistics, recapitalisation and future developments. The travel was funded by ARPANSA.

Second Consultancy to Develop the Publication 'Considerations in the Development of a Protection Strategy for a Nuclear or Radiological Emergency', Vienna, Austria, 21st to 24th March, 2016

ARPANSA participated in this meeting which drafted advice on aspects to consider in the development of a protection strategy, as required under the IAEA's General Safety Requirements Part 7. This strategy is to be adopted by Australia as a Trusted International Standard. Key outcomes to be included in the draft document include development of a hazard assessment, setting a national reference level, justification and optimization, economic and societal impacts and communication with interested parties. This travel was part funded by the IAEA and ARPANSA.

International Commission for Non Ionising Radiation Protection (ICNIRP) Data Gaps Project Group meeting, Rome, Italy, 25 March 2016

An ARPANSA expert participated in this meeting to discuss data gaps related to ICNIRP's guidelines on extremely low frequency radiation. Key outcomes included the identification of actual and potential data gaps needed to be addressed in order to enhance the guidelines.

Details of directions given by the Minister

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

Details of directions given by the CEO

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

Details of improvement notices given by inspectors

No improvement notices were given by inspectors under section 80A of the Act during the quarter.

Details of any breach of licence conditions by a licensee

The CEO is not aware of any breaches of license conditions by licensees during the quarter.

Facilities licensed under Part 5 of the ARPANS Act

No new facilities were licensed during the quarter.

The operations of the Council and Committees

Radiation Health and Safety Advisory Council

The Radiation Health and Safety Advisory Council (Council) met on 10-11 March 2016 at ARPANSA's Melbourne office in Yallambie, Victoria. A full version of the minutes will be published on ARPANSA's website.

Council Working Groups provided an update on their work programs and developments since the previous meeting. In particular, members emphasised:

- The importance of maintaining both actual and perceived independence in regulatory decision making; and
- The need for evidence-based decision making for emergency planning, with considerations to include scientific, social and economic factors.

Professor Chris Baggoley (Australian Government Chief Medical Officer) attended the meeting on 11 March to provide an overview of his current work, participate in discussion and highlight a number of topics of mutual interest. Members also discussed:

- ARPANSA's approach to risk communication and the processes in place to respond to public enquiries;
- The benefits of the Integrated Regulatory Review Service (IRRS) mission that Australia has requested for 2018;

- Ultra-violet (UV) protection programs in Australia; and
- Community engagement activities undertaken by the Department of Industry, Innovation and Science in relation to the site selection process for the National Radioactive Waste Management Facility.

Reports to the CEO from the Radiation Health and Safety Advisory Council under s.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 on 26 March 2016 in Sydney.

The RHC was briefed on community feedback on the process for choosing a site for the National Radioactive Waste Management Facility (NRWMF) by the Department of Industry, Innovation and Science.

Members noted that the IRRS mission to Australia in 2018 has been confirmed and that ARPANSA will again be writing to jurisdictions seeking their involvement in the mission.

The Committee was briefed on Trusted International Standards and the status of implementation of the COAG recommendations on the security of radioactive material.

Revised project proposals were approved for the development of an Existing Exposure Code and Emergency Exposure Code. Preliminary assessments on these and the Medical Code are to be completed for the Office of Best Practice Regulation (OBPR). A final version of the Planned Exposure Code is expected to be sent to the OBPR by June 2016.

Members noted the ongoing review of the 264 public responses to the Regulatory Impact Statement (RIS) on the use of intense pulsed light sources and lasers for cosmetic purposes. A Decision RIS is to be drafted for the OBPR and a Consultative Group will be formed if the RIS is approved.

The Committee agreed to provide feedback on a draft statement on the use of dual energy X-ray absorptiometry for non-medical purposes, and also on proposed licence conditions addressing Radiation Oncology Practice Standards.

The full meeting minutes are available at: <http://www.arpansa.gov.au/AboutUs/Committees/rhc.cfm>

The next RHC meeting will be held in Sydney on 15 June 2016.

Nuclear Safety Committee

The Nuclear Safety Committee (NSC) met on 18 March 2016 in Sydney.

Members provided feedback on ARPANSA's stakeholder engagement strategy and action plan for the NRWMF; and on the Regulatory Services Branch Annual Focussed Self-Assessment, scheduled for July 2016.

The NSC was briefed on operational aspects of controlled facilities, and provided feedback on the revised draft of the Periodic Safety and Security Review guide, developed jointly between ARPANSA and ASNO.

The minutes of the meeting are available at: <http://www.arpansa.gov.au/AboutUs/Committees/nscmt.cfm>

The next NSC meeting will be held on 17 June 2016.

Reports to the CEO from the Nuclear Safety Committee under s.26(1)(d) of the Act

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