



Australian Government

**Australian Radiation Protection
and Nuclear Safety Agency**

**QUARTERLY REPORT
OF THE
CHIEF EXECUTIVE OFFICER
OF ARPANSA
FOR THE PERIOD 1 APRIL 2009 TO 30 JUNE 2009**



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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's Manager Policy and Security of Sources on 1800 022 333 or e-mail at info@arpansa.gov.au. Further information about ARPANSA can be found on the Agency's website at www.arpansa.gov.au.

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Letter of Transmittal

4 August 2009

The Hon Mark Butler MP
Parliamentary Secretary to the Minister
for Health
Parliament House
Canberra ACT 2600

Dear Parliamentary Secretary

The *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act) requires the Chief Executive Officer 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;
- 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 paragraph 20(f) or 26(1)(d) of the Act; and
- a list of 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 2009 to 31 March 2009.

As you would be aware, Section 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



Peter Burns

Acting CEO of ARPANSA

Report on the operations of the CEO and ARPANSA

The report on the operations of the CEO and ARPANSA is based on the three output groups:

- national leadership in radiation protection and nuclear safety;
- knowledge, information and services relating to radiation protection and nuclear safety; and
- regulation of Commonwealth entities using radiation sources and facilities or nuclear installations.

National leadership in radiation protection and nuclear safety

Engagement with the Australian Government and national stakeholder bodies

NATIONAL UNIFORMITY

The main vehicle for the promotion of national uniformity of radiation protection throughout the jurisdictions is the National Directory for Radiation Protection which is jointly developed by ARPANSA with the State and Territory jurisdictions through the Radiation Health Committee.

During the quarter three amendments to the National Directory were forwarded to Health Ministers for approval of their adoption in the National Directory. The first amendment provided for adoption of a range of Codes and Standards published since Edition 1 of the Directory. The second amendment clarified provisions related to exemptions and exclusions. The third amendment provided for adoption of the ARPANSA *Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation* (2008). An answer from the Queensland Minister is required to complete approval from Ministers. The amended National Directory will then be published.

A fourth amendment on regulation of solarium was endorsed by Australian Health Ministers Advisory Council. Ministers will be asked to approve the amendment during the next quarter.

AUSTRALIAN NATIONAL RADIATION DOSE REGISTER

The Australian National Radiation Dose Register (ANRDR) will involve the collection, storage and auditing of radiological dose histories for uranium industry workers across Australia. ARPANSA has been commissioned to develop, construct and implement the ANRDR.

A steering committee comprising representatives from Commonwealth and State Governments and the uranium industry, met on 15 May 2009 to discuss progress of the ANRDR.

A questionnaire was circulated to uranium mine operators on 25 May 2009 to obtain details of dose assessment periods and worker categorisations used by industry. For the objectives of the ANRDR to be realised with scientific integrity, a uniform reporting framework and system of classification for workers must be established. ARPANSA has analysed the responses to the questionnaire and is drafting a technical brief to the Department of Resources Energy & Tourism and the Uranium Industry Framework.

A Safety Guide is to be developed in parallel to the ANRDR and will provide recommendations on the methods for monitoring, assessing and recording occupational radiation doses. Following consultation with industry stakeholders, a partial first draft of the Safety Guide was generated on 26 June 2009 and after internal review, the draft will be provided to an external review group and the Radiation Health Committee.

An information paper on the development of the ANRDR and Safety Guide was presented at the Uranium Public Information Evening held in Darwin on 11 June 2009 as part of the Australasian Institute of Mining and Metallurgy (AusIMM) International Uranium Conference. Technical papers on the ANRDR and Safety Guide were presented to industry professionals at the Radiation in Mining and Exploration Workshop held in Darwin on 12 June 2009 as part of the AusIMM International Uranium Conference.

RADIOACTIVE WASTE MANAGEMENT FRAMEWORK

ARPANSA led the Australian delegation to the Third Review Meeting of the Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management held in Vienna from 11 to 20 May 2009.

Five hundred participants representing forty-eight contracting parties attended over the eight days of the Review Meeting. The Review Meeting discussed the following aspects in relation to the management of spent fuel and radioactive waste:

- establishment of integrated national regulators by a number of contracting parties;
- increasing use of national radioactive waste plans including accurate and up to date inventories of waste. This was usually associated with a legislative mechanism;
- development of training programs by some contracting parties to ensure maintenance of expertise for regulators and operators;
- importance of stakeholder involvement in finding volunteer communities and licensing of facilities;
- decommissioning of legacy uranium mines has been a challenge for some contracting parties due to lack of funding;

- costs associated with decommissioning and waste disposal and the adequacy of electricity levies;
- progress on the establishment of deep geological disposal facilities;
- the feasibility of proposals for regional repositories by contracting parties with small nuclear programs;
- improving the management of disused sealed radioactive sources through development of centralised facilities to ensure the safety and security of the sources where disposal is not available; and
- the move by some contracting parties toward direct disposal of spent fuel in place of reprocessing.

Australia's report to the Review Meeting was well received and noted the good practices and challenges identified through the review process. The National Report and the questions and answers relating to the Report have been posted on the ARPANSA website at www.arpansa.gov.au/Regulation/Collaborations/jointconv.cfm.

During the quarter, work continued on the development and drafting of a new classification scheme for the disposal of radioactive waste in Australia. The draft Recommendations for the Classification of Radioactive Waste were finalised in early June 2009, and are to be presented to the July 2009 Radiation Health Committee meeting, for approval to proceed to public comment.

ARPANSA presented a position paper on Australia's approach to Naturally Occurring Radioactive Materials (NORM) management on past legacies and present issues at the 5th IBC International Conference on NORM and Natural Radiation Management, held in London on 28 to 29 May 2009.

CONTROL AND REGULATION OF RADIOLOGICAL MATERIAL

The COAG report on the control and regulation of radiological material recommends strengthening the security of dangerous radioactive sources by ensuring the adequacy of legislative and administrative controls, development and application of national uniform protective security standards, establishment of a national register of high activity radioactive sources and a security incident report system.

The recommendations in report are being implemented by radiation regulatory bodies in each jurisdiction together with police and the guidance of the Department of Premier and Cabinet. Most jurisdictions have implemented necessary amendments to legislative and regulatory requirements in order to give legal effect to the ARPANSA *Code of Practice for the Security of Radioactive Sources* (2007).

ARPANSA together with State and Territory radiation regulators has conducted workshops in each jurisdiction for licence holders, police and regulatory bodies to raise awareness of the COAG report recommendations, educate licence holders and radiation regulatory bodies about the requirements of the Code of Practice and support licence holders in developing draft security plans for radioactive sources.

ARPANSA has developed practice specific security guides that will assist licence holders and regulatory bodies in developing and assessing security plans. ARPANSA

has let a contract with an experienced IT services provider to assist in the design and build of the National Sealed Source Register. The register will be developed in cooperation with Commonwealth, State and Territory regulatory bodies.

NATIONAL CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR WORKING GROUP

The aim of the NCBRN Working Group is to build nationally consistent chemical, biological, radiological and nuclear (CBRN) operational and technical capability and capacity to prevent, prepare for, respond to, and recover from the threat of, or incidents involving the deliberate use of CBRN materials. The Working Group is administered through the Attorney General's Department and ARPANSA, as the Commonwealth regulator, provides technical advice to the Working Group. ARPANSA attended the May 2009 meeting of the Working Group in Canberra.

Singaporean study visit to understand management of Nuclear Powered Warship visits to Australian ports.

As part of joint activities between the Royal Australian and Royal Singaporean Navies, ARPANSA hosted a one day workshop in April 2009 for Singaporean representatives from the Royal Singaporean Navy, National Environment Agency, Civil Defence Force and DSO National Laboratories.

The objective of the workshop was to provide insight into ARPANSA's roles and responsibilities in the preparation and planning for a visit from a nuclear powered warship (including port validation activities) and response arrangements surrounding an incident involving a nuclear powered warship.

Participation in international conferences and meetings

IAEA SAFETY STANDARDS COMMITTEES

ARPANSA participated in the 27th IAEA Waste Safety Standards Committee (WASSC) meeting held at the IAEA in Vienna, 29 June to 2 July 2009. The meeting reviewed standards documents under preparation including the second draft of the proposed new Basic Safety Standards (DS379) and recommended to the Commission on Safety Standards the adoption of the new Safety Requirements - Disposal of Radioactive Waste (DS354) and the new Safety Guide: Storage of Spent Fuel (DS371). A document preparation plan for a new Safety Guide: Generic Criteria for the Radiation Protection of the Public and the Environment (DS432) was also approved for forwarding to the Commission.

ARPANSA participated in the 18th Meeting of IAEA Transport Safety Standard Committee (TRANSSC) during 29 June to 3 July 2009. This meeting discussed the updated status of the regulations and safety documents as they relate to safe transport of radioactive material. The issues arising from the recently held 3rd Review Meeting of Joint Convention, joint meeting of TRANSSC and WASSC (Waste safety Standard Committee), and the joint meeting of TRANSSC/WASSC/RASSC were noted.

IAEA IRRS FOLLOW-UP MISSION TO FRANCE

ARPANSA participated as an expert on security of radioactive sources in the IAEA Integrated Regulatory Review Service follow-up mission to France that was conducted from 30 March to 3 April 2009. The follow up mission was related to the regulatory activities of the French regulator, Autorité de Sûreté Nucléaire (ASN). ARPANSA contributed to the assessment of ASN's compliance with the IAEA Code of Conduct on the Safety and Security of Radioactive Sources.

INTERNATIONAL SYMPOSIUM ON NUCLEAR SECURITY

ARPANSA provided a paper and presentation for the inaugural International Symposium on Nuclear Security from 31 March to 3 April 2009 at the IAEA headquarters in Vienna. The paper focussed on how Australia implements international requirements for the security of radioactive sources and nuclear facilities and materials within a federal system of government. The paper was presented by a member of the Australian Government delegation to the Symposium.

SIXTY-SEVENTH MEETING OF THE NEA COMMITTEE ON RADIATION PROTECTION AND PUBLIC HEALTH (CRPPH)

ARPANSA attended the 67th meeting of the CRPPH at the OECD conference centre in Paris from 12 to 14 May 2009. The CRPPH is made up of regulators and radiation protection experts, with a broad mission to provide identification of new and emerging issues, to analyse their possible implications and to recommend or take action to address these issues to further enhance radiation protection regulation and implementation. Australia participates, through delegation, as a member state of the OECD to the CRPPH.

NINTH MEETING OF SL ASIAN NUCLEAR SAFETY NETWORK

ARPANSA is Australia's representative on the Steering Committee of the Asian Nuclear Safety Network. The Asian Nuclear Safety Network is an extra budgetary program of the International Atomic Energy Agency (IAEA) that is designed to support knowledge network and advance good practices in nuclear safety in the Asian and Pacific region. The Steering Committee meets twice yearly to design the program of activities that support nuclear safety in the region, through regional and national workshops and peer review missions.

ASIAN NUCLEAR SAFETY NETWORK (ANSN) WORKSHOP AND TOPICAL GROUP MEETING ON THE SAFE MANAGEMENT OF RESEARCH REACTORS

Under the program of the ANSN there are a number of topical groups that promote good practices in nuclear safety on particular issues. One such topical group is the Safe Management of Research Reactors. ARPANSA attended the annual meeting of the topical group on safe management of research reactors where a priority list of regional workshops, national workshops and peer review missions were discussed for submission to the upcoming 10th ANSN steering committee meeting later in the year where the program of the next three years will be finalised.

NUCLEAR ENERGY AGENCY NUCLEAR LAW COMMITTEE MEETING

ARPANSA attended as the Australian delegate to the Nuclear Energy Agency (NEA) Nuclear Law Committee Meeting held in Paris from 2 to 3 June 2009. The meeting provided an update on matters relating to nuclear law including:

- planned collaborations of the NEA with India and China;
- promotion of securing the availability of the radiopharmaceutical Molybdenum-99;
- development of proposals for an international fuel bank guaranteeing supply of nuclear fuel;
- the standing of non government organisations in decisions on nuclear projects and programmes in the US, Hungary, the Slovak Republic and Belgium;
- progress of assessment of the impact of nuclear liability regimes in the European Union;
- progress on development of a Nuclear Safety Directive by the European Commission;
- rekindling of the Nuclear Reactor programme in Sweden and the repeal of the Nuclear Phase Out legislation;
- new Waste Management legislation introduced in the Democratic Republic of Korea;
- recent decisions by the US Government in relation to the Yucca Mountain Waste Repository; and
- the decision by the Canadian Supreme Court on the dismissal of the former Chair of the Canadian Nuclear Safety Commission.

TWENTY FIRST MEETING OF THE NUCLEAR ENERGY AGENCY COMMITTEE ON NUCLEAR REGULATORY ACTIVITIES (CNRA)

ARPANSA is the Australian delegate to the Nuclear Energy Agency Committee of Nuclear Regulatory Activities (CNRA). The CNRA held its twenty first meeting in Paris in June 2009. At the meeting, the outcomes of the Multinational Design Evaluation Program for new nuclear power plants was discussed. In addition reports were received from CNRA working groups on inspection practices, operating experience, public communication, regulation of new reactors, as well as discussion of events of regulatory interest based on the national reports of each Member country.

IAEA RESEARCH REACTOR MILESTONES DRAFTING MEETING

ARPANSA was invited by the IAEA to join a consultancy group drafting an IAEA publication on 'Specific Considerations and Milestones in the Development of a Research Reactor' to be used by Member States that are considering developing a research reactor. It is also intended for Member States that are planning to build a new research reactor, designed for a specific purpose, to use it as a reference document. It is anticipated that the document will be finalised in 2009.

MEETING OF THE INTERNATIONAL ADVISORY COMMITTEE OF THE WHO INTERNATIONAL EMF PROJECT & WHO STANDARDS DATABASE

ARPANSA worked with the WHO on a revision of the WHO International standards database from 8 to 10 June 2009 in Geneva. A paper was presented at the International Advisory Committee. ARPANSA attended the 14th International Advisory Committee meetings of the World Health Organization's International EMF Project, in Geneva from 11 to 12 June.

IAEA REGIONAL MEETING ON DEVELOPING AND STRENGTHENING NUCLEAR SAFETY AND SECURITY INFRASTRUCTURE AND COMPETENCE

ARPANSA attended an IAEA meeting in Kuala Lumpur in May 2009 for the purpose of developing and strengthening regional nuclear safety and security infrastructure and competence. ARPANSA provided a presentation on 'Management Systems for a Regulatory Body'.

MEETING OF BEMS AND BEA

ARPANSA attended the joint meetings of the Bioelectromagnetics Society and European BioElectromagnetics Association in Davos, Switzerland from 14 to 19 June, and contributed a paper on the development of an Australian Standard for Exposures to Extremely Low Frequency Electric and Magnetic Fields.

International monitoring arrangements under the Comprehensive Test Ban Treaty

As part of Australia's commitment to the Comprehensive Nuclear-Test-Ban Treaty, ARPANSA continued to operate and maintain radionuclide air monitoring stations at Melbourne, Perth, Townsville, Darwin, and the Cocos Islands, Australia. ARPANSA also operates and maintains noble gas analyzer facilities, co-located with the air monitoring stations in Melbourne and Darwin.

The two remaining stations to be installed are located at Macquarie Island and Mawson, Antarctica. In 2008, negotiations with CTBTO were finalized for the installation of a radionuclide air monitoring station on Macquarie Island. A contract for the installation was signed in December 2008. In March 2009, a Request for Quotation was received from CTBTO for the provision and installation of a redundant detector system for the Macquarie Island radionuclide station. Subsequently, CTBTO approved the quote, and a spare detector system was ordered.

In May 2009, under contract to CTBTO, the high volume air sampler at the Perth radionuclide station was upgraded to a SENYA Snow White high volume sampler.

In addition to operating the stations, ARPANSA also operates the Australian CTBT Radionuclide Laboratory (CRL), which has the role of testing samples obtained by other monitoring stations. The CRL had initially been out of service for approximately 3 months while a change-over to new software and hardware was attempted. To avoid extended downtime, the CRL was put back into service at the beginning of April, using its initial software/hardware configuration. Two Network Quality Check samples have been processed since the CRL went back into service.

A new Quality Manual, incorporating all of the changes necessary to document the new hardware, software and procedures, has been drafted and will be finalised in

preparation for an anticipated second change-over in July 2009. The Laboratory operates under contract to CTBTO.

ARPANSA continues to maintain a National Data Centre that provides advice to the Australian Safeguards and Non-Proliferation Office on any event detected by the CTBT radionuclide network that may be indicative of a nuclear weapon test explosion.

Strengthening of regional capacities for emergency response

ARPANSA RADIATION EMERGENCY RESPONSE TEAMS

ARPANSA is responsible for the provision of teams in the event of an emergency or incident involving radiological or nuclear material under national and international arrangements.

During the quarter, ARPANSA conducted specialist detector training, call out exercises and readiness training and operational activities related to the location, identification and recovery of radiological and nuclear materials, including training in supporting skill sets.

As part of a joint activity with CSIRO, ARPANSA conducted field trials on indoor positioning systems to be used in the location of radiological or nuclear materials in a complex urban environment.

Knowledge, information and services relating to radiation protection and nuclear safety

Study of science relevant to knowledge of health effects of radiation

ULTRAVIOLET RADIATION (UVR)

The collaborative UVR exposure study with the University of Hawaii Cancer Centre proposed in 2007 commenced in June 2009. The study, measuring the UVR exposures of young adult females is part of a larger cancer study examining sun exposure, sun habits, diet, BMI, serum leptin, 25(OH)D, and Vitamin D3, in conjunction with diaries, ambient UVR and wearing personal daily UVR sensitive badges.

UVR related research done in collaboration with Emory University in the US by ARPANSA examining the occupational UVR exposures of lifeguards in pool settings has led a publication in the American Journal of Industrial Medicine. Another study done in collaboration with the Australian Antarctic Division Polar Medicine Unit examining UVR exposures of expeditioners to the Australian Antarctic stations has resulted in a publication in Photochemistry and Photobiology.

ARPANSA provided scientific support in measuring the potential emissions from UVR sources used by Australia Post Mail Centre at Melbourne Airport. ARPANSA calibrated phototherapy cabinets emissions using PS badges and an Ocean Optics UVR spectral measurement system.

ELECTROMAGNETIC RADIATION (EMR)

The ARPANSA Working Group preparing the radiation protection standard, 'Limits and Precautionary Measures for Reducing Exposure to Electric & Magnetic Fields — 0 Hz to 3 kHz', met on 6 May to finalise a draft for consideration by a consultative group set up to obtain comment from a broad range of affected stakeholders. Following receipt of comments from the consultative group a meeting of the Working Group was held on 26 June to agree on necessary changes to the Standard.

The ARPANSA survey of radiofrequency exposure levels produced by mobile phone base stations continued with a further three sites, in Tasmania and Victoria, being assessed and the results published on the ARPANSA web site at <http://www.arpansa.gov.au/RadiationProtection/BaseStationSurvey/index.cfm>.

ARPANSA completed compilation of a comprehensive catalogue of scientific research studies and literature reviews relating to possible health effects from exposure to radiofrequency electric and magnetic fields. The catalogue, of studies published since the completion of the ARPANSA *Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields - 3 kHz to 300 GHz* (2002), will be used to assess the need to update the Standard. Work is continuing to categorise and summarise the research results.

ARPANSA published, in collaboration with researchers from Monash University, a paper examining possible links between Non-Hodgkin's Lymphoma and occupational exposure to ionising radiation.

ARPANSA has prepared quality systems documentation and developed appropriate procedures to support NATA accreditation for measurements of public exposures to radiofrequency electric fields from base stations.

ARPANSA continued providing information to State and Australian government agencies and to the public and media regarding possible health effects of electric and magnetic fields and electromagnetic radiation from a variety of sources. The majority of enquiries relate to electric and magnetic fields in the extremely low frequency range, predominantly from electrical power infrastructure such as sub-stations, transmission lines and domestic installations. Other enquires relate to mobile phone base, mobile phone handsets, broadcast radio and television and computer wireless networks. ARPANSA provides a monthly summary, on its web site, of recent scientific publications considered to be of interest to the public concerned with health effects of electricity and EMR.

HEALTH PHYSICS

ARPANSA maintains scientific expertise, modelling and analysis tools and measurement facilities to provide advice on the protection of members of the public, workers and the environment.

The Radon Calibration Laboratory provided sixteen radon-222 standard exposures for calibration of the ARPANSA radon dosimetry service maintained by the ARPANSA Personal Radiation Monitoring Service.

The software system, ARGOS (Accident Reporting and Guidance Operational System) is a Decision Support System for Chemical Biological Radiological and Nuclear Emergencies. In May 2009, using ARGOS, ARPANSA participated in the Common Operating Picture trial in Darwin.

In June 2009, ARPANSA visited Geoscience Australia in Canberra to develop a better understanding of the data analysis techniques used to prepare radiometric maps. Information was also identified that may be used to prepare potential radon maps for future radon surveys

ENVIRONMENTAL RADIOACTIVITY

The ARPANSA Environmental Radioanalytical Laboratory continued to provide commercial services for radionuclide measurements to a limited set of clients. Standard commercial tests are performed to comply with NATA requirements.

The Laboratory participated in two international proficiency tests; (i) commercial tests provided by ERA (USA) required a solution to be analysed for gross-alpha and -beta activity and another to be analysed for radium-226, radium-228 and uranium, and (ii) the IAEA Analytical Laboratories for the Measurement of Environmental Radioactivity (ALMERA) program exercise comprised of solutions containing uranium-234, uranium-238 and radium-226; solutions to be analysed for gross-alpha and -beta activity; and a phosphogypsum sample to be analysed for uranium-234, uranium-238 and radium-226. Results from these proficiency tests became available in June 2009, and the Laboratory achieved acceptable results for all measurements

ARPANSA attended the Asia-Pacific Regional ALMERA Coordination Meeting from 20 to 21 April 2009 in Korea. The rapid determination of strontium-90 in milk samples remains a difficult technical problem, but an important problem to solve in order for laboratories to be ready in case of radiological emergency. Regional Laboratories have begun participation in an IAEA-sponsored project to develop methods for the rapid analysis of strontium-89 and strontium-90 in milk and to undertake related proficiency tests.

A project to investigate a method for determining low levels of polonium in fish and tinned sea-food continued during the quarter, with a new method for sample preparation using the microwave digester being trialled.

A method for the sequential extraction of uranium, thorium and polonium isotopes from a spiked solution has been successfully demonstrated. A 'Custom Column Selection System' has been developed and has been commissioned into service.

The CEO of ARPANSA advised the Parliamentary Secretary to the Minister for Health of its decision to rationalise its fallout monitoring programme by closing the ARPANSA radioactivity fallout monitoring stations in Adelaide, Brisbane, Melbourne and Hobart. ARPANSA has advised relevant Government Agencies of these changes. Work to decommission the ARPANSA fallout monitoring stations commenced towards the end of June 2008.

Scientific programs to support the measurement and assessment of radiation (ionizing and non-ionizing)

SURVEYS OF PATIENT DOSES

Project management has been initiated for the National Diagnostic Reference Level (DRL) Survey for multi-detector computed tomography (MDCT). This project will be undertaken in close cooperation with Royal Australian & New Zealand College of Radiology (RANZCR) and will develop a web based DRL survey form for MDCT which will eventually be expanded to cover interventional radiology, mammography

and general radiography for patient dosimetry surveys. This project will provide radiology practices with generic, comparative dose information from across Australia. It will also enable radiology practices to comply with the ARPANSA *Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation* (2008) requirement for comparison of patient doses against established DRLs.

The initial data analysis of an MDCT dose optimisation survey completed in collaboration with RANZCR Quality Use of Diagnostic Imaging (QUDI) program, Queensland Health and the Australasian College of Physical Scientists & Engineers in Medicine has shown significant reduction in MDCT patient doses comparing pre and post optimisation training.

ARPANSA has taken delivery of a new dosimetry (PTW Diados electrometer with CT, radiographic/fluoroscopic and mammography chambers) and an x-ray analyser system (RTI Piranha) to develop generic phantom based dosimetry data for DRL surveys. This equipment will be used in the medical physics laboratory and on site to establish and verify the output of various types of x-ray systems.

To enhance the communication and collaboration between ARPANSA and medical professionals the medical physics section has had four papers and one poster accepted for the RANZCR, Australasian College of Physical Scientists & Engineers in Medicine, Australian Institute of Radiography and the Faculty of Radiation Oncology of RANZCR Combined Scientific Meeting in Brisbane, during September 2009. The papers are titled:

- Diagnostic Reference Levels as a Quality Assurance Tool
- Distributions of National Medicare Benefits Scheme MDCT Scanning (1994 – 2008)
- Utility of a web based data survey form for a national MDCT radiology practice survey
- Application of the European DOSE DATAMED methodology and reference numbers for the calculation of Australian MDCT effective dose (mSv)

Presentations on DRLs and dose optimisation have also been given to the North Queensland Radiographers Regional Workshop, RANZCR Council, Radiation Health & Safety Advisory Committee and Radiation Health Committee.

ARPANSA was invited to be a member of the teaching faculty for the 'Joint International Centre for Theoretical Physics & International Atomic Energy Agency (ITCP-IAEA) Advanced School of Dosimetry in Diagnostic Radiology and its Clinical Implementation' held in Trieste, Italy, 11 to 15 May 2009. The course covered a detailed overview of the IAEA Technical Report Series No. 457 – *Dosimetry in Diagnostic Radiology: An International Code of Practice*. Participation provided valuable experience in international understandings on diagnostic radiology dosimetry, participation in international projects and establishing international networks for future communications on projects of interest.

IONIZING RADIATION STANDARDS

The new ARPANSA medical standards linear accelerator has had acceptance testing and the majority of commissioning completed and has undergone baseline measurement of x-ray and electron beams. Training was undertaken in the Mosaik 'record and verify' system and confirmed the capability of accepting the output of a

clinical treatment planning system to give a simple treatment to the ARPANSA Rando phantom head

During July, ARPANSA attended the ACPSEM KV09 meeting on Recent Trends in Superficial and Orthovoltage Therapeutic Dosimetry at the Institute of Medical Physics, University of Sydney. ARPANSA provided some sponsorship and supported J Laban from the National Radiation Laboratory in Christchurch, NZ.

A new 130 TBq cobalt source for which approval had been given under ARPANS Regulation 51 was to be sourced out of Russia. However, this has proved to be too difficult and an alternative cobalt source of comparable strength (138 TBq) was recently located in the USA. It is possible that delivery could be made within a few months if the necessary export permits can be obtained.

The calibration of therapy reference dosimeters has been resumed on the existing cobalt source despite the low dose rate. Longer exposure times are required to ensure the required accuracy is obtained. No therapy centres have been audited over the past quarter.

Calibration certificates were issued for:

- 4 therapy reference dosimeters
- 2 associated electrometers
- 3 personal dosimeters
- 4 gamma survey meters
- 3 Caesium-137 reference beams.

National Physical Laboratory (UK) and the German national standards laboratory (PTB)

ARPANSA visited the National Physical Laboratory (UK) and the German national standards laboratory (PTB) in Braunschweig. Both laboratories have installed medical linacs comparable to the new ARPANSA linac to maintain dosimetry standards appropriate to cancer therapy treatment facilities. The NPL and ARPANSA linacs have been nominally matched by the manufacturer and how this was to be utilised was discussed with the NPL.

Asia Pacific Metrology Program

The Asia Pacific Metrology Programme (APMP) is primarily responsible for developing international recognition of the measurement capabilities of the region's national and territorial measurement laboratories. The Asia-Pacific Metrology Programme (APMP) is a grouping of national metrology institutes ('NMIs') from the Asia-pacific region engaged in improving regional metrological capability through the sharing of expertise and exchange of technical services among Member laboratories. Rapid technological development and industrial growth within the region have placed increased demands on metrological services, and there is growing recognition of the importance of metrology to international trade through conformance testing and quality systems.

During the quarter, transfer standard dosimeters were received from NMIJ (Japan) for the Asia Pacific Metrology Program APMP.RI(I)-K2 comparison of low energy kilovoltage x-ray air kerma standards. Measurements were made in April and the equipment has been returned to be passed to the next laboratory in the sequence.

International Bureau of Weights and Measures (BIPM)

ARPANSA provided the Australian delegate to the 19th meeting of Section I (x-rays, electrons and protons) of the Ionizing Radiation Consultative Committee, CCRI(I), at the International Bureau of Weights and Measures (BIPM) in Paris.

As well as the Committee meeting, there were working group meetings for the key comparison program for international radiation measurement standards and for accelerator dosimetry. A one day workshop was held on measurement standards for low dose rate and high dose rate brachytherapy.

After the CCRI(I) meeting, the BIPM provided ARPANSA with components of a new primary standard of air kerma that will ultimately replace the Australian national standard. This device has been brought back to Australia for precise measurements of its volume and will be returned to the BIPM for final assembly.

Transfer chambers from ARPANSA had been used by BIPM in the November 2008 bilateral comparison of low energy kilovoltage x-ray air kerma standards. The three transfer chambers were returned to ARPANSA during the quarter and stability measurements on the chambers were performed. Two of the three chambers showed excellent stability while one showed some unreliability and may not be included in the final comparison results. This comparison is complete and a draft report is in preparation.

RADIOPHARMACEUTICAL QUALITY ASSURANCE

ARPANSA is continuing to develop and validate alternatives to Instant Thin Layer Chromatography-Silica Gel (ITLC-SG) for use in the radiochemical purity measurement of reconstituted 'cold kit' radiopharmaceuticals in the clinical environment. Results to date indicate that two types of chromatography paper may be suitable.

The annual results of the 2008 quality assurance testing program for radiopharmaceuticals, were published during the quarter.

RADIOFREQUENCY MEASUREMENTS

ARPANSA operates a NATA accredited radiofrequency calibration service for hazard probes and monitors in support of occupational health and safety, mainly in the area of telecommunications. During the quarter, the service completed 73 calibration jobs of which 68 were completed to NATA accreditation requirements. This included 40 monitors with 26 associated probes and 33 personal monitors and badges.

Personal radiation monitoring service

The ARPANSA Personal Radiation Monitoring Service (PRMS) has continued to offer a comprehensive radiation monitoring service for persons who may be exposed to ionizing radiation as a consequence of their occupation. A service is also provided for the measurement of radon and natural background radiation levels.

At the end of June 2009 the PRMS had 26,209 active wearers. During the quarter ending 30 June the Service issued a total of 38,907 monitors.

UV protection factor rating for clothing

The UPF rating service had a busy quarter testing 452 samples. Thirty-eight licenses were granted for use of the ARPANSA swing tags on clothing. A total of 93 tag orders were received and 2,283,000 tags were despatched.

Information through written material

PUBLICATIONS

Gies P, Glanz K, O’Riordan D, Elliot T, Nehl E. Measured Occupational Solar UVR Exposures of Lifeguards in Pool Settings. *Am. J. Indust. Med.* 52:645–653, 2009.

Peter Gies, Roland Watzl, John Javorniczky, Colin Roy, Stuart Henderson, Jeff Ayton and Melissa Kingston. Measurement of the UVR Exposures of Expeditioners on Antarctic Resupply Voyages. *Photochem. Photobiol.* (in Press) June 2009.

Karipidis KK, Benke G, Sim MR, Fritschi L, Vajdic C, Krickler A, Armstrong B. ‘Non-Hodgkin lymphoma and occupational radiation exposure assessed using local data’ *Occup Med (Lond)*. 2009 Jul 3. [Epub ahead of print]

Ivanov, Z., Results of the Quality Assurance Testing Program for Radiopharmaceuticals (2008), ARPANSA Technical Report Series, TRS 151, June 2009, ISSN 0157-1400 and is available on the ARPANSA Website.

CONFERENCE PAPERS

O’Brien, R.S., Melbourne, A.J. and Johnston, A. The Australian Approach to NORM Management: Integrating past legacies, present issues and future challenges.

WORKSHOP PAPERS

Tinker, R., Strengthening radiation protection in the Australian uranium mining and milling industry, AusIMM Uranium Public Information Evening, Darwin, 11 June 2009.

Doering, C., The Australian National Radiation Dose Register, AusIMM Radiation in Mining and Exploration Workshop, Darwin, 12 June 2009.

Mason, G.C., Tinker, R., Doering, C., Development of a Safety Guide on dose assessment, AusIMM Radiation in Mining and Exploration Workshop, Darwin, 12 June 2009.

ARPANSA website

During the quarter there were 221,343 visits to the ARPANSA website. The most popular web pages were those containing information about mobile phones and health. Visitors downloaded 39,951 documents predominantly from the ARPANSA Radiation Protection series which can be found at

www.arpansa.gov.au/Publications/codes/rps.cfm and the Radiation Health Series which can be found at www.arpansa.gov.au/Publications/codes/rhs.cfm.

The most frequently downloaded single page was the factsheet about the measurement of magnetic fields www.arpansa.gov.au/pubs/factsheets/mag_fields.pdf.

Regulation of Commonwealth entities using radiation sources and facilities or nuclear installations material, apparatus and facilities

Regulatory activities

INSPECTIONS - UNANNOUNCED

| Licensee | Licence Number | Location |
|---------------|------------------|--|
| ANSTO (HIFAR) | F0184 | Lucas Heights site - HIFAR |
| ANSTO (OPAL) | F0157 | Lucas Heights site – OPAL |
| ANSTO | F0044-5A, 5B, 5C | Building 54 at ANSTO (Lucas Heights) |
| ANSTO | FO0044-WOTD | ANSTO Waste Operations Facility at ANSTO (Lucas Heights) |
| ANSTO | F0044-5A, 5B, 5C | Building 23A at ANSTO (Lucas Heights) |
| ANSTO | F0044-5A, 5B, 5C | Building 23A at ANSTO (Lucas Heights) |

INSPECTIONS - ANNOUNCED

| Licensee | Licence Number | Location |
|--|----------------|---|
| ANSTO (OPAL) | F0157 | Lucas Heights site - HIFAR |
| ARPANSA Environmental and Radiation Health Branch | S0002 | Yallambie, VIC |
| ARPANSA Medical Radiation Branch | F0046 | Yallambie, VIC |
| Australian Defence Force and Department of Defence | S0042 | - 3CSSB Dental - 3CSSB Medical - Lavarack Barracks Medical Centre Townsville QLD |
| Australian Defence Force and Department of Defence | S0042 | RAAF Tindal, 75 Squadron, NT |
| Australian Defence Force and Department of Defence | S0042 | RAAF Tindal, Base Armament, NT |

| Licensee | Licence Number | Location |
|--|-----------------------|--|
| Australian Defence Force and Department of Defence | S0042 | Robertson Barracks, Darwin WTSS (Weapons Training Simulation System), NT |
| Australian Defence Force and Department of Defence | S0042 | RAAF Darwin, Base Armament 321ECSS (Expeditionary Combat Support Squadron), NT |
| Australian Defence Force and Department of Defence | S0042 | RAAF Darwin, Joint Logistics Unit North, NT |
| Australian Institute of Marine Science | S0007 | Townsville, QLD |
| Australian Quarantine and Inspection Service | S0120 | Melbourne Gateway Facility, VIC |
| Australian Quarantine and Inspection Service | S0120 | Post-Entry Quarantine Station, Spotswood, VIC |

INSPECTION REPORTS ISSUED

| Licensee | Report number | Inspection |
|--|----------------------|--|
| ANSTO | R09/05547 | HIFAR Maintenance Arrangements |
| ANSTO | R09/03896 | OPAL Maintenance Arrangements |
| ANSTO | R08/08927 | Waste Operations Facilities |
| Australian Defence Force and Department of Defence | R09/04784 | RAAF Richmond, 37 Squadron, NSW |
| Australian Defence Force and Department of Defence | R09/05290 | RAAF Richmond, 3CSH (Combat Support Hospital), NSW |
| Australian Institute of Marine Science | R09/05813 | Townsville, QLD |
| CSIRO Livestock Industries | R09/06118 | St Lucia, QLD |
| CSIRO Minerals | R09/02970 | Pullenvale, QLD |
| CSIRO Plant Industry | R09/04918 | Black Mountain, Canberra ACT |
| Geoscience Australia | R09/01724 | Canberra, ACT |

LICENCE APPLICATIONS

| Licensee | Licence Number | Type |
|--|----------------|--|
| Australian Institute of Marine Science | S0007 | Source – Sealed source in a fully enclosed analytical device |
| Australian Sports Commission | A0208 | Source – X-ray unit for bone mineral densitometry |
| CSIRO Land and Water | S0009 | Source – Sealed source with activity of 400 MBq or less in a fixed gauge |
| Reserve Bank of Australia | A0207 | Source – Optical sources – Laser products – Baggage inspection x-ray units – Radiofrequency plasma tubes |

REGULATION 51 REQUESTS FOR APPROVAL (RECEIVED)

| Licensee | Number | Type | Comment |
|---|------------------|----------|--|
| ANSTO (HIFAR) | F0184 | Facility | Request for removal of rig soak test facility from HIFAR reactor |
| ANSTO (MOATA) | F0044-6A | Facility | Request for approval of pre-dismantling activities of MOATA reactor |
| ANSTO | FO0044-4C | Facility | Request for transfer and storage of material |
| ANSTO | F0044-5A, 5B, 5C | Facility | Request for three additional runs within the parameters of approval of hot commissioning of the Building 54 Fission Product Processing Plant |
| ANSTO | F0044-5A, 5B, 5C | Facility | Request for five additional runs within the parameters of approval of hot commissioning of the Building 54 Fission Product Processing Plant |
| CSIRO Molecular and Health Technologies | S0016 | Source | Request for approval to deal with fully enclosed x-ray analysis units |
| Parks Australia North | FV0093 | Facility | Request to construct a radiological containment at El Sherana airstrip in Gunlom Aboriginal Land Trust Area |

REGULATION 51 APPROVALS

| Licensee | Number | Type | Comment |
|---|------------------|----------|---|
| ANSTO (OPAL) | F0157 | Facility | Approval of Change to OLC 3.4.2 and 3.4. |
| ANSTO (HIFAR) | F0184 | Facility | Approval of removal of rig soak test facility |
| ANSTO (HIFAR) | F0184 | Facility | Approval of drainage of No 1 Storage Block |
| ANSTO (MOATA) | F0044-6A | Facility | Approval of pre-dismantling activities of MOATA reactor |
| ANSTO | FO0044-4C | Facility | Approval of transfer and storage of material |
| ANSTO | F0044-5A, 5B, 5C | Facility | Approval for three additional runs within the parameters of approval of hot commissioning of the Building 54 Fission Product Processing Plant |
| ANSTO | F0044-5A, 5B, 5C | Facility | Approval for five additional runs within the parameters of approval of hot commissioning of the Building 54 Fission Product Processing Plant |
| ANSTO | S0045 | Source | Approval given to deal with controlled material off-site for educational and training purposes |
| ANSTO Institute of Environmental Research | S0045 | Source | Approval given for continued use of Am-Be source (with conditions attached) |
| Australian War Memorial | S0080 | Source | Approval given to relocate sources to new store (with conditions attached) |
| CSIRO Materials Science and Engineering | S0066 | Source | Approval to relocate sources to new store |
| CSIRO Sustainable Ecosystems | S0018 | Source | Approval given to deal with fully enclosed x-ray analysis units, and lasers |
| Parks Australia North | FV0093 | Facility | Approval given to build radiological containment (with conditions attached) |

REGULATION 54 APPROVALS

| Licensee | Number | Type | Comment |
|------------------|--------|----------|---|
| PETNET Australia | F0201 | Facility | Construction of an item important for safety, the Hot Cell Interlocks |

ISSUED, SURRENDERED OR AMENDED LICENCES

| Licensee | Number | Type | Comment |
|---|--------|--------|--|
| ANSTO | S0045 | Source | The S0045 licence was amended to allow dealings with Group 1 and Group 2 sealed sources off-site for training and educational purposes |
| ANSTO Bragg Institute | S0171 | Source | The S0171 neutron beam hot commissioning source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| ANSTO Bragg Institute | S0202 | Source | The S0202 neutron beam normal operation source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| ARPANSA Environmental & Radiation Health Branch | S0002 | Source | The S0002 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| ARPANSA Medical Radiation Branch | S0003 | Source | The S0003 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| ARPANSA Non-ionizing Radiation Branch | S0051 | Source | The S0051 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |

| Licensee | Number | Type | Comment |
|--|--------|----------|---|
| ASC PTY LTD | S0190 | Source | The S0190 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Attorney-General's Department | S0151 | Source | The S0151 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Attorney-General's Department D Branch | S0188 | Source | The S0188 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Australian Crime Commission | S0034 | Source | The S0034 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Australian Customs Service | F0187 | Facility | The licence for the Australian Customs Service Brisbane neutron scanner has been surrendered as the facility has been decommissioned |
| Australian Defence Force and Department of Defence | S0042 | Source | The S0042 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |

| Licensee | Number | Type | Comment |
|--|--------|--------|--|
| Australian Federal Police | S0056 | Source | The S0056 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Australian Postal Corporation | S0150 | Source | The S0150 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Australian Securities & Investments Commission | S0129 | Source | The S00129 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Australian Trade Commission | S0203 | Source | S0203 was a new licence issued to deal with baggage inspection x-ray units |
| Australian War Memorial | S0080 | Source | The S0080 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Entomology | S0017 | Source | The S0017 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Corporate Property | S0013 | Source | The S0013 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |

| Licensee | Number | Type | Comment |
|---|--------|--------|--|
| CSIRO Energy Technology | S0025 | Source | The S0025 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Food Science Australia | S0023 | Source | The S0023 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Industrial Physics | S0105 | Source | Source licence S0105 was surrendered following the merger of CSIRO Industrial Physics into CSIRO Materials Science and Engineering (S0066) |
| CSIRO Livestock Industries | S0022 | Source | The S0022 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Marine and Atmospheric Research | S0019 | Source | The S0019 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Materials Science and Engineering | S0066 | Source | Amended to include additional dealings resulting from merger of divisions. The S0066 source licence was also amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |

| Licensee | Number | Type | Comment |
|--|--------|--------|---|
| CSIRO Minerals | S0064 | Source | The S0064 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Plant Industry | S0021 | Source | The S0021 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Petroleum Resources | S0030 | Source | The S0030 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Sustainable Ecosystems | S0018 | Source | The S0018 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| CSIRO Textile and Fibre Technology | S0010 | Source | The S0010 source licence was surrendered due to the merger of CSIRO Textile and Fibre Technology with CSIRO Materials Science and Engineering |
| Department of the Environment, Heritage, Water and the Arts – Antarctic Polar Medicine | S0008 | Source | The S0008 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |

| Licensee | Number | Type | Comment |
|---|--------|--------|---|
| Department of the Environment, Heritage, Water and the Arts – Australian Antarctic Division | S0055 | Source | The S0055 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Department of the Environment, Heritage, Water and the Arts – Supervising Scientist Division | S0015 | Source | The S0015 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Department of Foreign Affairs and Trade (DFAT) | S0079 | Source | The DFAT source licence S0079 was amended and reissued to include dealings with industrial x-ray equipment |
| Department of Immigration and Citizenship | S0135 | Source | The S0135 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Department of Parliamentary Services | S0052 | Source | The S0052 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Department of Resources, Energy and Tourism – Geoscience Australia – Geospatial & Earth Monitoring Division | S0047 | Source | The S0047 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |

| Licensee | Number | Type | Comment |
|----------------------------|--------|--------|---|
| Family Court of Australia | S0040 | Source | The S0040 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Federal Court of Australia | S0036 | Source | The S0036 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Law Courts Limited | S0165 | Source | The S0165 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Royal Australian Mint | S0173 | Source | The S0173 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |
| Silex Systems Ltd | S0090 | Source | The S0090 source licence was amended as part of a general review of all ARPANS source licences, and reissued. The review took account of new Codes of Practice and Australian Standards etc which have been published since the licence was last reissued |

LICENCE EXEMPTION

The CEO of ARPANSA has declared in writing that the use of Ni-63 in gas chromatographs by the Department of Foreign Affairs and Trade (S0079) up to an activity of 750 MBq is exempt subject to conditions on disposal of the devices, and has been published in the *Gazette*.

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 to Health and Ageing may authorise ARPANSA officers to approve import permissions. ARPANSA authorised officers also issued 215 permits for medical radioisotopes including five urgent single shipments, 204 single shipments and six twelve month permits. ARPANSA authorised officers also issued 117 permits for customs release of non-medical radioisotopes, comprising 53 urgent single shipments, 56 standard single shipments and 8 twelve monthly permits.

EXPORT PERMITS

The export of high activity radiation sources from Australia requires permission under Regulation 9AD of the *Customs (Prohibited Export) Regulations 1958*. These regulations are made under the *Customs Act 1901*. Under the *Customs (Prohibited Export) Regulations 1958*, the Minister for Health and Ageing may authorise ARPANSA officers to approve export permissions.

In accordance with the authorisation by the Minister for Health and Ageing under the *Customs (Prohibited Import) Regulations 1958*, ARPANSA authorised officers issued one export permission during the quarter.

Regulatory process and performance

QUALITY MANAGEMENT

ARPANSA is continuing with its revision and improvement of the regulatory quality management system (QMS) to ensure that the regulatory processes are managed according to a comprehensive QMS which meets the ISO 9000 standard.

Significant progress has been made and work is currently focused on completing the development of documentation of detailed policies and procedures. It is expected that this labour intensive phase of the work will be completed by December 2009.

REGULATORY KEY PERFORMANCE INDICATORS

The regulatory Management Information System is being further revised to allow more accurate and complete collection of data particularly for determining performance against key performance indicators (KPIs).

Regulatory performance is reported annually according to targets set in the Health and Ageing Portfolio Budget Statement in three main categories as follows:-

1. Number of accidents and incidents.
2. Number of licence and relevant change assessments and inspection reports per staff member
3. Stakeholder satisfaction surveys

Performance in category 1 for the June 2009 quarter is tabled below. Performance in categories 2 and 3 will be reported annually where it can be more meaningfully interpreted in an annual context against the targets set in the Portfolio Budget Statement.

PROGRESS AGAINST KPI'S 2008/2009

| Measure ^a | 1 April to 30 June 2009 | Annual Target ^b |
|---|-------------------------|----------------------------|
| Accidents/incidents that must be reported within 24 hours | 0 | < 5 |
| Incidents that are not accidents | 3 | < 40 |

Notes

- a. The KPI 'Number of inspection and assessment reports per staff member' which was included in previous quarterly reports has not been included. It will be reported in the Annual Report where it can be more meaningfully interpreted in an annual context against the target set in the Portfolio Budget Statement.
- b. The annual targets were derived based by estimation only. They will be progressively refined over time as actual data is collected and trends can be determined.

Details of any breach of licence conditions by a licensee during the quarter, of which the CEO is aware

BREACHES DETERMINED BY THE CEO

| Licensee | Number | Nature of breach | Action |
|--|--------|---|---|
| Australian Defence Force and Department of Defence | S0042 | Breach of s 31(2) of the ARPANS Act by failing to comply with own plans and arrangements | No enforcement action required. Defence HMAS Penguin diving school have modified their operational procedures and training requirements to prevent a future recurrence |
| Australian National University | S0027 | Breach of s 31(2) of the ARPANS Act by disposing of 2 items of non-ionising radiation controlled apparatus without prior approval | No enforcement action required. A system of labelling equipment has been introduced to prevent future inadvertent disposal |
| CSIRO Corporate Property | S0013 | Breach of s 31(2) of the ARPANS Act for not providing an environmental audit in the required timescale | No enforcement action required. The environmental audit has now been performed |
| CSIRO Industrial Physics | S0105 | Breach of s 31(2) of the ARPANS Act by disposing of 5 items of non-ionising radiation controlled apparatus without prior approval | No enforcement action required. Source licence S0105 has subsequently been surrendered due to the merging of CSIRO Industrial Physics into CSIRO Material Science and Engineering (S0066) |
| Federal Court of Australia | S0036 | Breach of s 31(2) of the ARPANS Act for late submission of April – June 2008 quarterly report | No enforcement action required. Subsequent quarterly reports have been submitted in a timely fashion |
| National Measurement Institute | S0142 | Breach of s 31(2) of the ARPANS Act for disposing of 3 controlled non-ionising radiation apparatus without prior approval | No enforcement action required. New procedures have been implemented to prevent further unauthorised disposals |

A list of all facilities licensed under Part 5 of the ARPANS Act

There were no new facility licences issued during the quarter.

Operations of the Radiation Health and Safety Advisory Council, the Radiation Health Committee and the Nuclear Safety Committee

Radiation Health and Safety Advisory Council

Council met at ARPANSA's Yallambie Office on 11-12 June 2009. A summary of Council's meeting is available on the ARPANSA web site at www.arpansa.gov.au/AboutUs/Committees/rhsacmt.cfm.

On 11 June 2009, Members visited the new linear accelerator and the ultraviolet radiation laboratories at ARPANSA followed by a tour of the Australian Synchrotron at Glen Waverley.

Outcomes of the meeting included:

- the recommendation to the CEO that the Code of Practice and Safety Guide for Radiation Protection in Veterinary Medicine be adopted
- discussion of the finalisation and publication of the Safety Guide for Use of Radiation in Schools, Part 1: Ionizing Radiation;
- discussion of the current regulatory framework in Australia to control the misuse of laser pointers;
- discussion of a request by the CEO on management and disposal of long-lived intermediate level radioactive waste including agreeing on Council's proposed workplan. Council discussions included presentations on the classification of radioactive waste, Australia's inventory and radium legacy waste;
- discussion of briefing on the protection of pregnant patients and exposure to diagnostic ionising radiation;
- consideration of a report on the hot commissioning process issues with regard to the OPAL reactor; and
- Consideration of a report on the outcomes of the 3rd Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

Members also attended a talk by Dr Ziggy Switkowski on 'Climate Change and the Role of Nuclear Power'.

Radiation Health Committee

The Committee did not meet during the quarter. The next meeting is scheduled for 22 and 23 July 2009.

Nuclear Safety Committee

The Nuclear Safety Committee met on 1 May 2009 at Miranda. A summary of the meeting is available at www.arpansa.gov.au/AboutUs/Committees/nscmt.cfm.

This was the first meeting of the fourth triennium of the Committee and three new Members were attending for the first time. The new Members were Mr Christopher

Tola, representing the interests of the general public, Dr Denise Wheeler and Mr Robert Lyon who replaced the outgoing Members, Mr Jim Hondros, and Professors Marcel Bilek and Peter Johnston. Mr Don Macnab also replaced Dr Barbara Shields as Chair of the Committee, although Dr Shields remained on the Committee as the representative of Radiation Health Committee.

The meeting was largely introductory in nature with Members receiving briefings on:

- nuclear safety in the context of the role of ARPANSA and its statutory responsibilities. This discussion included aspects of the licence assessment process, the legal challenges relating to a nuclear power industry in Australia should the political decision be made to proceed down that path and the OPAL reactor.
- the scope of nuclear regulation currently undertaken by ARPANSA, including both reactor and non-reactor nuclear installations.
- ARPANSA's perspective on current international issues in nuclear safety.

Members also discussed the possible scope of the program for Nuclear Safety Committee over the next three years. Other matters considered at the May meeting included recent activities of both ARPANSA and the CEO and reports of earlier meetings of Radiation Health and Safety Advisory Committee and Radiation Health Committee.

The next scheduled meeting of Nuclear Safety Committee is 9 October 2009 at Miranda.

Reports to the CEO from the RHSAC and NSC (paragraphs 20(f) and 26(1)(d) of the Act)

No reports from the Radiation Health and Safety Advisory Committee and Nuclear Safety Committee were provided to the CEO of ARPANSA during the quarter.

Details of directions given by the Minister under Section 16

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