



Australian Government

**Australian Radiation Protection
and Nuclear Safety Agency**

QUARTERLY REPORT

OF THE

CHIEF EXECUTIVE OFFICER

OF ARPANSA

FOR THE PERIOD 1 OCTOBER 2009 TO 31 DECEMBER 2009



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**Australian Radiation Protection
and Nuclear Safety Agency**

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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 web site at www.arpansa.gov.au.

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Letter of Transmittal

11 February 2010

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
- 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 October 2009 to 31 December 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 key strategic directions:

- apply best practice regulation through the promotion of national uniformity and regulation
- promote the most effective use of radiation in therapeutic treatments and in diagnostic medicine
- improve radiation protection of workers, the public and the environment from natural sources including uranium mining and radioactive waste disposal
- assure the security of radioactive sources in Australia and strengthen Australia's capability to respond to radiation emergencies
- monitor and advise on population exposures to ultraviolet radiation, extremely low frequency electric and magnetic fields and electromagnetic radiation.

National uniformity and regulation

National Directory and national uniformity

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

During the quarter, a new edition of the NDRP was published, incorporating Amendment 1 (adoption of a range of Codes and Standards published since Edition 1 of the Directory), Amendment 2 (clarifying provisions related to exemptions and exclusions), and Amendment 3 (adoption of the *Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation*), following endorsement of the amendments by Ministers.

A fourth amendment on solarium was forwarded to Ministers for endorsement, and awaits the response of one jurisdiction.

Amendment 5, dealing with a clarification on application of ionizing radiation principles to non-ionizing radiation, adoption of the Veterinary Code, and a range of editorial matters was released for public comment.

Supporting the NDRP, the *Code of Practice for Radiation Protection in the Application of Ionizing Radiation by Chiropractors* (RPS 19) and the *Safety Guide for Use of Radiation in Schools, Part 1: Ionizing Radiation* (RPS 18) were published.

Commonwealth regulation

SIGNIFICANT LICENSING ACTIVITIES

During November 2009, ARPANSA completed the regulatory assessment and approved the hot commissioning of an application for a facility licence to operate the PetNet facility by PetNet Australia Pty Ltd a wholly owned subsidiary of ANSTO.

ARPANSA was also notified of the shutdown of the National Medical Cyclotron.

ANSTO provided ARPANSA with additional information relating to Australian Radioisotopes and Industrials (ARI) submission to construct an external liquid waste interim store. Assessment of this submission under Regulation 51 of the ARPANS Regulations is continuing.

As the Competent Authority for inland transport by Commonwealth entities under the *ARPANSA Code of Practice for the Safe Transport of Radioactive Material* (the Transport Code), the CEO of ARPANSA validated USA Package Design Certificate USA/9215/B(U) in accordance with that Code.

ARPANSA approved:

- the extension of ANSTO Building 57 Delay and Decay Storage Facility on 10 December 2009 under Regulation 51 of the ARPANS Regulations 1999
- the transport of un-irradiated fuel for ANSTO's OPAL research reactor during October in accordance with the Transport Code.

In December 2009, the Department of Energy, Resources and Tourism formally surrendered the Maralinga facility licence FV0043, following the return of the former British atomic weapons test site to the South Australian Government.

A meeting of the Defence ARPANSA Liaison Forum was held at the Department of Defence offices in, Campbell in November 2009.

SAFETY OUTCOMES AND REGULATORY BURDEN

A series of inspections took place during the quarter to monitor compliance with the ARPANS Act and Regulations. Some minor non-compliances were observed, but no significant trends were identified.

Through an ARPANSA campaign of licence holder education and timely reminder notices, the submission of licensee quarterly reports within the required timescales was in excess of 95% for the July – September 2009 quarter.

Strict adherence to the quarterly reporting process is considered particularly important to support communication and interaction between ARPANSA and its licence holders. This enables the keeping of up to date information on the status of licensed facilities and sources, any relevant developments and compliance status generally.

REGULATORY GUIDANCE

Regulatory guidance for ARPANSA licensees on the recommended working life of their sealed sources was posted on the ARPANSA web site.

International engagement

INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION

The bi-annual meeting of the Main Commission and the five Committees of the International Commission on Radiological Protection was held in Porto, Portugal from 8 – 12 November 2009. ARPANSA was represented at the meeting of Committee 4. Items discussed centred on Naturally Occurring Radioactive Material and Occupational Exposures. The Main Commission also issued a statement of radon exposures.

ASIAN NUCLEAR SAFETY NETWORK STEERING COMMITTEE MEETING

The 10th Meeting of the Steering Committee of the Asian Nuclear Safety Network was held in Singapore from 20-22 September 2009. ARPANSA provides Australia's representative on the Steering Committee. The purpose of the network is to promote capacity building and the sharing of information and expertise in relation to nuclear safety within the Asian and Pacific region. The focus of this meeting was to set a three year program for regional and national activities to promote nuclear safety infrastructure and provide assistance to those countries in the region who wish to realise a nuclear power program by 2020.

IAEA CONFERENCE ON EFFECTIVE NUCLEAR REGULATORY SYSTEMS

ARPANSA attended the second international meeting on Effective Nuclear Regulatory systems, organised by the International Atomic Energy Agency, in Cape Town South Africa from 14-18 December 2009. The conference underscored the importance of a strong, effective, global nuclear safety and security regime and the responsibility of all nuclear regulators, operating organisation and vendors to maintain it. Representatives from Europe, America, Latin America, Africa and the Asian Pacific region attended the conference. Key themes of the conference were the independence of regulatory bodies; emerging regulatory challenges; enhancing international safety and security communication and co-operation and the role of regional networks in capacity building. It was agreed that another meeting should be held in three years time to assess the progress that the international community has made in relation to these important objectives.

IAEA COMMISSION ON SAFETY STANDARDS

ARPANSA participated in the 26th IAEA Commission on Safety Standards (CSS) meeting held at the IAEA in Vienna, 14 – 16 October 2009. The following draft publications and document preparation plans approved:

- Disposal of Radioactive Waste, Safety Requirement (DS354), Governmental, Legal and Regulatory Framework for Safety, Safety Requirement (DS415)
- Chemistry Programme for Water Cooled Nuclear Power Plants, Safety Guide (DS388)

- Radiation Safety in Industrial Radiography, Safety Guide (DS408)
- Radiation Safety of Gamma, Electron and X Ray Irradiation Facilities, Safety Guide (DS409)
- Ageing Management for Research Reactors, Safety Guide (DS412)
- Licensing Process for Nuclear Installations, Safety Guide (DS416)
- Seismic Hazards in Site Evaluation for Nuclear Installations, Safety Guide (DS422)
- a new Safety Guide on External Expert Support on Safety Issues (DPP DS429)
- a revision of NS-G-1.8, for a Safety Guide on Design of Electric Power Systems for NPPs (Nuclear Power Plants) (DPP DS430)
- a revision of NS-G-1.1 and NS-G-1.3, for a Safety Guide on Design of I&C Systems for NPPs (DPP DS431)
- a new Safety Guide on Volcanic Hazards in Site Evaluation for Nuclear Installations (DPP DS405).

There was substantial discussion on the language to be used in requirements documents to differentiate overarching requirements, specific requirements and auxiliary text. These differences will be clarified in upcoming discussions on the strategies and processes for the establishment of IAEA Safety Standards document.

IAEA WASTE SAFETY STANDARDS COMMITTEE

ARPANSA participated in the 28th IAEA Waste Safety Standards Committee (WASSC) meeting held at the IAEA in Vienna, 16 – 19 November 2009. The WASSC meeting was timed to coincide with RASSC. The meeting reviewed standards documents under preparation including:

the October 2009 draft (v.2.5) of the proposed new Basic Safety Standards (DS379), in light of the recent ICRP Statement on Radon and recommended to the CSS the adoption of the new Safety Requirements, DS413 Safety of Nuclear Power Plants: Operation and the new Safety Guide DS334 Geological Disposal of Radioactive Waste.

Document preparation plans for new Safety Guides: DS433 DPP Site Survey and Site Selection for Nuclear Installations; DS434 DPP Radiation Safety of Radioisotope Production Facilities and DS437 DPP Regulations for the Safe Transport of Radioactive Material, 20XX Edition, were also approved for forwarding to the Commission.

IAEA RADIATION SAFETY STANDARDS COMMITTEE

ARPANSA participated in the 26th meeting of the IAEA Radiation Safety Standards Committee (RASSC) meeting in Vienna, 16-19 November 2009. A number of IAEA Safety Standards publications were agreed to progress to the next stage of development. The main discussion of the meeting was the revision of the International Basic Safety Standards. A detailed review of the draft and issues raised in members' comments was undertaken. The IAEA Secretariat plans to update the draft taking into account the outcomes of this meeting and a December 2009 meeting on radon with

the aim of producing a draft suitable for member state comment by about the end of January 2010.

IAEA TECHNICAL MEETING ON THE REVISION OF THE BASIC SAFETY STANDARDS (BSS): NEWEST RECOMMENDATIONS ON HEALTH EFFECTS FROM RADON — THE IMPACT ON REGULATORY REQUIREMENTS

ARPANSA participated in this meeting, held at the IAEA Headquarters in Vienna, Austria, 15-16 December 2009. Its purpose was to evaluate the most recent scientific evidence on radon with a view to developing requirements to control exposure to radon in mines and other underground workplaces, industries involving naturally occurring radioactive material (NORM), above-ground workplaces and homes. These requirements are to be incorporated into the revision of the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS), Safety Series No. 115.

ARPANSA represented Australian interests at the meeting, from both a radiation protection perspective and from the perspective of the potential impacts on the Australian uranium mining industry from changes to the methodologies for the assessment of radon progeny exposure to workers in mines.

IAEA ILLICIT TRAFFICKING POINTS OF CONTACT MEETING

ARPANSA attended the IAEA Illicit Trafficking Points of Contact meeting held in Vienna, Austria. The meeting considered how the Illicit Trafficking Database could be of further use by the IAEA and participating countries, discussed strategies for widening membership of countries reporting to the database and enhancing the level of reporting from existing members. Australia chaired a session of the meeting addressing the scope of data currently collected and means for expanding reporting to the database.

MEETING WITH UNITED STATES NATIONAL NUCLEAR SECURITY AGENCY AND SANDIA NATIONAL LABORATORIES

ARPANSA meet with the United States National Nuclear Security Agency and Sandia National Laboratories on matters relating to detection of radioactive material, categorisation and security measures relating to radioactive sources and consequences of malicious use. The agencies agreed that there were sufficient topics of mutual interest to warrant the development of a draft 18 month work plan.

Radiation in medicine

Radiotherapy calibration service

The proposed reference X-ray beams (6, 10 and 18 MV) from the Elekta medical standards linear accelerator (linac) for direct calibration of hospital reference dosimeters have been undergoing quality assurance checks for stability and reproducibility. At the same time, absolute measurement of the absorbed dose rates by calorimetric techniques has advanced as a better understanding of the conditions is obtained. In October, two ionization chambers were sent to the National Physical Laboratory (UK) for irradiation in nominally identical X-ray beams, as an initial

cross-check of standards at megavoltage beam energies. The agreement is encouraging but several issues have been raised that need to be resolved before a calibration program can commence.

During the quarter, only two cancer treatment centres had therapy reference dosimeters calibrated indirectly using the therapy level ARPANSA cobalt-60 gamma-ray source. The calibration service on this facility was suspended in early December. This was to allow the decayed source to be removed, making way for the delivery of a new, higher activity, cobalt-60 source in early 2010.

Australian Diagnostic Reference Levels for Computed Tomography

A draft Excel spreadsheet survey form was distributed to 15 selected radiology practices to test the usability of the proposed survey method. Whilst most practices did respond, the rigor of the response was disappointing. The incomplete data that were returned were, in most cases, applicable as a survey tool however, there was an underlying problem with data recorded at the worksite that needs to be addressed.

Further discussions with Royal Australian and New Zealand College of Radiologists (RANZCR) and the Australian Institute of Radiography (AIR) are required to improve the take-up and data rigor of the survey.

Promoting optimisation in the medical application of ionizing radiation

A group from the Royal Princess Alexandra Hospital in Queensland used the ARPANSA linac to study neutron production and activation products that occur in a therapy treatment head when high energy megavoltage X-ray beams are generated.

During the quarter, ARPANSA was represented at:

- a conference sponsored by the French ASN (Nuclear Safety Authority) on *Modern radiotherapy challenges and advances in radiation protection of patients* in Versailles, 2-4 December 2009. This event discussed radiotherapy incidents in France such as that at the Epinal hospital which resulted in 25 fatalities and several hundred compromised patients
- the EPSM/ABEC conference in Canberra, 9-12 November 2009, to give oral presentations on a Monte Carlo model of the ARPANSA medical standards linac and beam matching with clinical linacs, and on the results of the 2009 ARPANSA survey of radiotherapy centres
- the Combined Scientific Meeting (CSM) of the RANZCR, AIR and ACPSEM, 22-25 October 2009. ARPANSA presented three papers and three posters
- the 25th General Assembly of the Asia Pacific Metrology Program in Kuala Lumpur on 14-17 December 2009 to participate in the workshop of the Ionizing Radiation Technical Committee where ARPANSA reported on the ARPANSA linac measurement program
- the Engineering Physics in Medicine Meeting in Canberra. A poster was presented and a half-day Multi Detector Computed Tomography (MDCT) Optimisation Workshop at the meeting was conducted.

An optimisation overview paper was published in December 2009 in the professional journal of the AIR: K Edmonds, *Diagnostic reference levels as a quality assurance tool*, *The Radiographer*, **56**(3), 33-57, 2009.

The adult data set of the Queensland MDCT Optimisation project has been submitted to the *Journal of the American College of Radiology (JACR)* for publication.

The MDCT anthropomorphic optimisation phantom was delivered and skin entrance dose measurements have been made for some standard radiographic views.

ARPANSA is continuing to investigate alternative chromatographic media to replace the now unavailable instant thin layer chromatography strips. This information is important to the reliable measurement of the radiochemical purity of radiopharmaceuticals used in nuclear medicine.

Protection of individuals from natural sources of radiation

Measurement and assessment capability

ENVIRONMENTAL RADIO-ANALYTICAL LABORATORY

The Environmental Radio-analytical Laboratory continued to provide commercial services, in compliance with NATA requirements, for radionuclide measurements. An automated sequential method of analysis, for uranium, polonium, radium and thorium was developed, and work continued on the development and validation of a rapid method for the analysis of strontium-89/90 in milk. Additionally, a Quantulus ultra-low-level Liquid Scintillation Counter was installed which will further enhance the laboratory's capability for measuring very low levels of environmental radioactivity.

The Laboratory also participated in a proficiency test exercise for the analysis of americium-241, caesium-134, caesium-137, cobalt-60 and zinc-65 (by high resolution gamma spectrometry) uranium-234, uranium-238, plutonium-238, plutonium-239 (by alpha spectrometry) and strontium-90. All results were within expected ranges.

ARPANSA continued to provide commercial services for radionuclide measurements. Standard commercial tests were performed to comply with requirements of the National Association of Testing Authorities. ARPANSA provided radon calibration services to both internal and external clients using its radon exposure facility and it provided commercial radon monitoring services to a number of external clients.

CONFERENCE PRESENTATIONS AND POSTERS

Sdraulig, S., *Rapid method for the analysis of ⁸⁹Sr and ⁹⁰Sr in milk*, IAEA: 6th ALMERA coordination meeting, 23 – 25 November 2009, Budapest, Hungary.

Hardege, L., *Sequential Injection Chromatography in the Development of Automated Radiochemical Separations*, November 2009, Thesis submitted to the faculty of Science, Monash University as part of a Master of Science Preliminary Program.

Wright, T., Solomon, S., and Tinker, R., *A preliminary assessment of radon in Australian homes and comparison with previous studies*, Australasian Radiation Protection Society Conference, Fremantle, 25-28 October 2009.

Tjong, L., Urban, D., Carpenter, J., Wright, T., Solomon, S., and Tinker, R., *Derivation of intake activity limits based on generic reference levels for internal dose in a radiological incident* (poster), Australasian Radiation Protection Society Conference, Fremantle, 25-28 October 2009.

PERSONAL RADIATION MONITORING SERVICE (PRMS)

The ARPANSA 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.

Exposures in uranium mining and NORM industries

ARPANSA has been commissioned to develop, construct and implement The Australian National Radiation Dose Register (ANRDR). The ANRDR involves the collection; storage and auditing of radiological dose histories for uranium industry workers across Australia. A working version of the web based portal that will allow stakeholders to engage with the register on a secure platform was successfully tested. A presentation on the purpose and progress of the ANRDR was made at the 34th Australasian Radiation Protection Society Conference in Fremantle.

A safety guide for the methods of monitoring, assessing and recording occupational radiation doses in mining and mineral processing has been developed in relation to the ANRDR project. A completed draft was presented to the Radiation Health Committee for comment and approval for release for public comment in early 2010.

Work on the EMRAS II Working Group 2 (Legacy Sites and NORM) has continued with the collection of site descriptions and data for sites in Argentina, France, Belgium, Italy and Estonia. This work will be developed further for the next Working Group meeting in January 2010. Some preliminary modelling work has also been carried out by members of the Working Group for the next meeting.

Environmental assessment in mining

The 2007 Recommendations of the International Commission on Radiological Protection makes the radiological protection of the environment explicitly part of international best practice and promulgates the use of Reference Animals and Plants for radio-ecological impact assessments. ARPANSA continued its literature survey of models and methodologies to do with radio-ecological impact assessment to examine their suitability and limitations in the context of Australian uranium mining environments.

A presentation was given on changes to radiation protection of the environment philosophy and the ARPANSA environmental assessment project at the Australasian Radiation Protection Society annual conference in Fremantle on 28 October 2009.

An overview of the ARPANSA environmental assessment project was presented to the Uranium Industry Council at its meeting in Canberra on 18 November 2009.

ARPANSA has since joined a working group under the Council's 'Sustainability' theme to address environmental and radiation issues associated with uranium mining.

Solar UVR

EDUCATION

The ARPANSA ultra-violet radiation (UVR) network continued to provide live UV Index data for display on the ARPANSA web site. Work is continuing to increase availability of the UVR data to more mobile phone applications. ARPANSA is cooperating with a Cancer Council Victoria study to monitor the effects that live UV Index data delivered to mobile phones have on increasing awareness and modifying behaviour.

Publication of live UV index data from the Australian Antarctic Stations and Macquarie Island commenced in late December 2009 on ARPANSA's web site.

ARPANSA continued to provide advice to governments, industry and the public concerning possible health risks from exposure to real and potential sources of UVR including compact fluorescent lamps, solaria and lamps used in the cosmetics industry.

Presentations were given on the hazards of UVR and EMR at the LABCON Conference at Monash University.

STUDIES

The collaborative paper on UVR Exposures of Expeditioners with the Australian Antarctic Division has been published in Photochemistry and Photobiology. Measurements of the UVR emissions from compact fluorescent lights (CFL's) have been made and a report summarizing the UVR emissions and their possible effects on people with lupus or other photosensitive conditions was provided to the Department of the Environment, Water, Heritage and the Arts (DEWHA). This collaborative work with DEWHA has now been extended, with DEWHA supplying 58 CFLs to ARPANSA from the list of low UV emitting lamps provided by lamp manufacturers. Initial measurements in the UVR and blue light regions have been completed and analysis is underway, with the aim of providing this information to photosensitive people via the ARPANSA and DEWHA web sites.

ARPANSA has continued to undertake assessment and measurement of industrial hazards associated with the use of UVR. It has assisted in investigations of an apparent cluster of skin cancers to address concerns that they may be related to exposure to fluorescent lamps.

PUBLICATIONS

Gies, P, Watzl, R, Javorniczky, J, Roy, C, Henderson, S, Ayton, J and Kingston, M, *Measurement of the UVR Exposures of Expeditioners on Antarctic Resupply Voyages*. Photochem Photobiol. 85: 1485-1490, 2009.

Neale, R, Hamilton, A, Janda, M, Gies, P and Green, A C, *Seasonal variation in measured solar ultraviolet radiation exposure of adults in Nambour, Queensland*. Photochem Photobiol. (in Press) November 2009.

Monitoring and mitigating population exposures to electric and magnetic fields and electromagnetic radiation

Standard for limiting exposure to electric and magnetic fields

ARPANSA completed the editing of the draft Radiation Protection Standard: Limits and Precautionary Measures for Reducing Exposure to Electric & Magnetic Fields — 0 Hz to 3 kHz to take into account matters raised through the consultation process. Work continued on the preparation of the Regulatory Impact Statement (RIS) on this Standard. Presentations on both the draft Standard and the RIS were made at the Energy Networks Association EMF Scientific Workshop in November in Melbourne and useful feedback regarding the Standard was received.

Emerging science on health effects of electromagnetic radiation (EMR) and fields

ARPANSA continued to monitor scientific publications relating to possible adverse health effects of electromagnetic radiation and fields. To make this research more accessible to the concerned public, ARPANSA has continued to publish on its web site monthly summaries of interesting and relevant research publications. This augments the answering of individual enquires relating to health effects of EMR from the public, industry and all levels of government.

The collection and analysis has continued of scientific research studies published since the ARPANSA Radiofrequency Exposure Standard, RPS3, was prepared. This will enable informed recommendations to be made about the need to review the ARPANSA Standard.

ARPANSA hosted a two-day meeting in November of GLORE, (the Global Coordination of Radiofrequency Communication Research and Health Policy) where new research relating to health effects of EMR and the regulatory responses in various countries. Scientists and government representatives from 9 countries attended, including Australian and New Zealand.

EMR exposure from Mobile Phones and new technologies

ARPANSA continued its monitoring of electromagnetic radiation emissions from mobile phone base stations with three more sites, in Queensland and the Northern Territory, being added to the web site. A total of 16 base stations have now been

measured in this survey showing maximum exposure levels in public areas from less than 0.001% to 1.16% of the public exposure limit.

Public Information

In the reporting period there were 161504 visits to the ARPANSA web site. The most popular web pages were those providing information about radiation and mobile phones. Radiation and health information sheets and educational information about radiation basics were also popular.

Visitors downloaded 30448 documents predominantly from the ARPANSA Radiation Protection series (RPS) which can be found at www.arpansa.gov.au/Publications/codes/rps.cfm. The most frequently downloaded single page was RPS No.3, Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields - 3 kHz to 300 GHz (2002). When visitors used the search facility, the two most frequently used search terms were 'lasers' and 'mobile phones'.

Security of sources and response to radiation emergencies

COAG recommendations for radiological material

EDUCATION AND AWARENESS

ARPANSA has delivered an education and awareness program for security of radioactive sources to support the Code of Practice. Overall, in excess of 300 users of radioactive sources have participated in workshops on source security requirements.

CODE OF PRACTICE IMPLEMENTATION

The *Code of Practice for the Security of Radioactive Sources* was published in 2007 as Radiation Protection Series No. 11. It is a general condition of licence in the *ARPANS Regulations 1999*. Requirements of the Code of Practice have also been adopted by the States and Territories.

Further work will be undertaken with jurisdictions on implementation of security background checking for persons with access to Category 1-3 radioactive sources.

ARPANSA's radiation security experts have commenced a program working with users and radiation regulators to evaluate security plans developed by users for their facilities. The security plans are based on the approach and template provided to users during training courses conducted in 2009. This program of expert assistance to users and regulators will continue throughout 2010 with the intention of facilitating early implementation of security plans in a nationally consistent manner.

NATIONAL REGISTER OF RADIATION SOURCES

ARPANSA has now completed the building and testing of a national register of radiation sources with only minor system configuration for remote access to be completed. Integration of the nine federal and state radiation regulators' systems and the upload of data commenced in October 2009.

Emergency response capability

NATIONAL

In December a one day workshop was held at the Defence Science and Technology Organisation (DSTO) site in Melbourne to discuss Phase 2 of the EMA project to establish a National Atmospheric Hazard Modelling and Analysis Centre (NAHMAC). Attending the workshop were representatives from ARPANSA, DSTO and the Bureau of Meteorology. The workshop centred on determining metrics and creating appropriate scenarios in which to assess the metrics for various types of modelling software packages for use in Chemical, Biological and Radiological emergency situations.

ARPANSA chairs the Technical Working Group of the Visiting Ships Panel (Nuclear) (VSP(N)), to provide expert advice on radiation protection and nuclear safety issues, as part of the Australian contingent to allow visits by nuclear powered warships (NPW). In November 2009, the VSP(N) held a NPW Seminar, attended by relevant State, Territory and Australian Government organisations involved in NPW visit planning, to discuss and review current arrangements. Early December 2009, ARPANSA lead the VSP(N) Technical Working Group in the process of NPW port validations for Melbourne and Hobart.

ARPANSA maintained a 24 hour radiation emergency duty officer to provide 24 hour access to ARPANSA resources and expertise. During October, ARPANSA carried out training for its radiation assessment and monitoring teams.

REGIONAL

ARPANSA provided a lecturer for the workshop on Infrastructures Needed for Off-site and On-site Emergency Preparedness and Response Activity, and on Medical Treatment was held in Kuala Lumpur, Malaysia 16 - 20 November, 2009. This workshop was organised within the framework of the Asian Nuclear Safety Network (ANSN) and provided an opportunity to advance work by ARPANSA in strengthening regional emergency preparedness networks.

International monitoring network

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 (Keeling) Islands, Australia, including two noble gas analyzer facilities, collocated 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 December 2008, a contract for the installation on Macquarie Island was signed.

In September, equipment for the Macquarie Island installation was packed and transported to Hobart for shipping to Macquarie Island. In October the equipment was successfully delivered to Macquarie Island on the *Aurora Australis*.

Budgets for the Testing & Evaluation/Post Certification Activities for all of the Australian radionuclide air monitoring stations including the two NG facilities were submitted to CTBTO. The Budgets were subsequently approved with minor revisions, and the new 12-month budget cycle begins 1 January 2010.

In addition to operating the stations, ARPANSA also operates the Australian CTBT Radionuclide Laboratory, which has the role of testing samples obtained by other monitoring stations. The Laboratory operates under contract to CTBTO, and analyzed several samples during the quarter. The Laboratory also participated in the annual CTBTO Proficiency Test Exercise, and the results are expected in early 2010.

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

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

Details of breaches determined by the CEO are shown in Table 1, below.

Table 1: Breaches determined by the CEO for the quarter ended 31 December 2009

| Licensee | Number | Nature of breach | Action |
|--|--------|---|--|
| ARPANSA Medical Radiation Branch | S0003 | Breach of s31(2) by failing to meet the licence condition of keeping an up-to-date, accurate source inventory workbook | Response received indicating actions to be undertaken to ensure an up-to-date source inventory workbook. No enforcement action taken |
| Federal Court of Australia | S0036 | Breach of s31(2) of the ARPANS Act by failing to submit a quarterly report for the period 1 April to 30 June 2009 within the required time period | Response received indicating that the internal process for handling quarterly reports will be reviewed in order to prevent reoccurrence. No enforcement action taken |
| Geoscience Australia | S0014 | Breach of s31(2) of the ARPANS Act by failing to appropriately label items in the isotope store as required by licence condition 6 | Breach rectified by labelling of items. No enforcement action taken |
| Geoscience Australia | S0014 | Breach of s31(2) of the ARPANS Act by failing to follow their own Plans and Arrangements, as required by Regulation 49 | Geoscience Australia has committed to reinforcing implementation of its policies and procedures to all relevant staff. No enforcement action taken |

Facilities licensed under Part 5 of the *ARPANS Act*

Details of facilities licensed under Part 5 of the *ARPANS Act* during the December quarter are provided in Table 2 below

Table 2: Facilities licensed under Part 5 of the *ARPANS Act* during the quarter ended 31 December 2009

| Licensee | Number | Type | Comment |
|--|--------|----------|---|
| Australian Defence Force and Department of Defence | F0213 | Facility | A new facility licence has been issued to Defence which authorises it to:- <ul style="list-style-type: none"> a) possess and control a new closed waste storage facility at Koolymilka, Woomera b) decommission the existing waste storage facility LA5 at Woomera c) decommission the existing waste storage facility at RAAF Edinburgh |
| PetNet | F0211 | Facility | To operate for the purpose of Hot Commissioning. Awaiting ANSTO confirmation of some hot commissioning results |

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

Radiation Health and Safety Advisory Council

The Council met at ARPANSA's Miranda office on 6 November 2009. On 5 November, Council met with the CEO of ANSTO, Dr Adi Paterson at ANSTO's Lucas Heights Laboratories. The Parliamentary Secretary for Health, The Hon. Mark Butler MP, attended Council's meeting on 6 November 2009. A summary of Council's meeting is available on the ARPANSA web site at <http://www.arpansa.gov.au/AboutUs/Committees/rhsacmt.cfm>.

At the meeting:

- Department of Resources, Energy and Tourism, and ANSTO officers gave presentations to Council on radioactive waste matters. Council discussed its draft report on intermediate level radioactive waste and agreed on a program to complete the report at the first meeting in 2010
- Council recommended adoption and publication of the Code of Practice for Radiation Protection in the Application of Ionizing Radiation by Chiropractors
- Council discussed current issues related to the national and international supply of molybdenum-99 for use in nuclear medicine.

Radiation Health Committee

The Committee met on the 25 and 26 November at ARPANSA's Yallambie offices. A full summary of the meeting is available at www.arpansa.gov.au/AboutUs/Committeess/rhcmt.cfm

At the meeting, the Committee:

- agreed that National Directory for Radiation Protection Amendment 5 that included the Code of Practice & Safety Guide for Radiation Protection in Veterinary Medicine and the Code of Practice for Radiation Protection in the Use of Ionizing Radiation by Chiropractors could be released for public comment
- was advised of progress on the Draft Radiation Protection Standard for Exposure to Electric and Magnetic Fields 0Hz-3kHz, including review by a technical editor. Members were asked to make comments on this draft. A regulatory impact statement is progressing and is expected to be completed in January 2010. A full package of final papers is expected to be circulated for consideration at the March 2010 meeting
- agreed that the Safety Guide for Occupational Doses Received in Mining and Mineral Processing be released for public comment once changes agreed at the meeting had been made.

- agreed that the Recommendations for the Classification of Radioactive Waste recommendations could progress to Council for approval, subject to finalising a decision on a definition of radioactive waste out of session
- agreed to withdraw publications RHS 8 (Minimizing Hazards to Patients) & 14 (Nursing Code) due to their being effectively replaced by the new Medical Code and Safety Guides.

Nuclear Safety Committee

The Committee did not meet during the quarter. The next meeting is scheduled for May 2010.

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

No reports from the RHSAC and NSC 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.