



**QUARTERLY REPORT
OF THE
CHIEF EXECUTIVE OFFICER
OF ARPANSA**

FOR THE PERIOD 1 JULY TO 30 SEPTEMBER 2001



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ISSN 1444-4380

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Printed by

CanPrint Communications Pty Ltd
16 Nyrang Street
Fyshwick ACT 2609

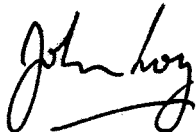
7 November 2001

Senator the Hon Grant Tambling
Parliamentary Secretary to the Minister for Health and Aged Care
Parliament House
CANBERRA ACT 2600

Dear Senator Tambling

In accordance with the *Australian Radiation Protection and Nuclear Safety (ARPANS) Act 1998*, I present to you my Quarterly Report for the period 1 July to 30 September 2001.

Yours sincerely



Dr John Loy
CEO of ARPANSA

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FOREWORD

The *Australian Radiation Protection and Nuclear Safety Act 1998* requires the Chief Executive Officer of the Australian Radiation Protection and Nuclear Safety Agency to submit to the Minister, at the end of each quarter, a report on the operations during the quarter of the CEO, ARPANSA and the Council and Committees constituted under the Act.

The quarterly report should also include 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 Radiation Health and Safety Advisory Council and the Nuclear Safety Council on radiation protection, nuclear safety and the safety of controlled facilities and details of facilities licensed under Part 5 of the Act.

Further details about matters contained in this report are available through the ARPANSA Information Officer who can be contacted by telephone on 03 9433 2211, by facsimile on 03 9432 1835 or by e-mail to arpansa@health.gov.au.

REPORT ON PERFORMANCE

1. Uniformity of Radiation Protection Frameworks

National Competition Policy Review of Radiation Protection Legislation

- 1.1 On 1 August, the Australian Health Ministers Conference noted the Final Report of the NCP review. The Ministers agreed that ARPANSA should coordinate jurisdictions' responses to the recommendations and produce a national position. On 7 August the CEO of ARPANSA invited formal responses from all jurisdictions. Upon receipt of all the responses, ARPANSA will, if necessary, negotiate a national position and submit the outcome and an implementation plan to Ministers through the Australian Health Ministers' Advisory Council.

National Directory for Radiation Protection

- 1.2 The Radiation Health Committee discussed the draft National Directory at its meeting from 18 to 19 July. The Committee made a number of suggestions and referred the draft to the National Uniformity Implementation Panel (Radiation Control). The Panel considered the changes suggested by the Radiation Health Committee at its meeting on 26 September 2001 and made a number of comments. The changes to the draft National Directory will be made in October 2001 by the Secretariat. The Panel also agreed that a Regulatory Impact Statement will have to be prepared for the National Directory after further development of the draft and following consultation with stakeholders in each jurisdiction.

2. Advice on Radiation Protection and Nuclear Safety

Nuclear powered warships

- 2.1 The Environmental and Radiation Health Branch provided environmental monitoring and marine sample analysis for visits by nuclear powered warships to Brisbane and Perth during July and August. The Health Physics Section maintained on-call health physics teams for the period of each visit. Officers from the Regulatory Branch and the Environmental and Radiation Health Branch attended a meeting of the Visiting Ships Panel (Nuclear).

Conferences, meetings and technical advice

Non-Ionising Radiation Branch

- 2.2 Peter Gies attended an Anti-Cancer Council of Australia (ACCV) conference from 22 to 23 July in Melbourne to prepare a chapter on “Solar and Ultraviolet Radiation” for the first draft of a proposed book on “Skin Cancer Prevention”. Dr Gies also presented a paper on “Solar and Ultraviolet Radiation” at the ACCV Sun Protection Seminar on 24 July.
- 2.3 Peter Gies provided ultraviolet radiation expertise for the Australian Cancer Society’s National Skin Cancer Steering Committee meeting on sunscreens and ultraviolet radiation in the range 315 nanometres to 400 nanometres at the NSW Cancer Council on 23 August in Sydney. Dr Gies also provided scientific input to the Standards Australia Committee CS53 Sunglasses Meeting in Melbourne from 4 to 6 September.
- 2.4 Wayne Cornelius and Ken Karipidis made presentations on the development of a standard on radiofrequency exposure and a survey on extremely low frequency to a scientific workshop of the Electrical Suppliers Association of Australia on 6 July in Melbourne.
- 2.5 Wayne Cornelius chaired a meeting of Standards Australia Committee SF/19 from 31 July to 2 August on the revision of safety standards for laser equipment. Mr Cornelius also attended a technical sub-committee meeting of Standards Australia Committee CS/98 on 7 August to develop test procedures for laser speed gun equipment.
- 2.6 The work of the Branch focussed mainly on the development of the draft radiofrequency exposure standard and supplementary public information for the ARPANSA website. Work also continued on the Electromagnetic Radiation Health Effects register and the radiofrequency database of peer reviewed literature.

Medical Radiation Branch

- 2.7 An ARPANSA Fact Sheet on, “The Use of ⁶⁰Co Calibration Factors in Megavoltage Dosimetry”, was published and circulated to all radiotherapy centres in Australia to ensure that radiation calibrations provided by ARPANSA, or other ARPANSA certified calibration laboratories, are properly used in hospital protocols. Robert

Huntley presented the Fact Sheet to the Radiotherapy Interest Group at the Engineering and Physical Sciences in Medicine 2001 Conference from 30 September to 4 October 2001. At the same conference, Keith Wise and Julian Thomson presented a paper on “Estimates of radiation risk from mammography screening in Australia”.

- 2.8 The Medical Physics Section completed its work for the Scoping Group for medical radiation publications of the Radiation Health Committee. The Committee accepted the document development plan for the “Code of Practice for Diagnostic and Interventional Radiology” and the “Code of Practice for Radiotherapy”.

Environmental and Radiation Health Branch

- 2.9 Stephen Solomon attended a meeting of the National Chemical Biological and Radiological Working Group held at the Emergency Management Australia training college at Mount Macedon from 6 to 7 August and an inter-departmental meeting in Canberra on 9 August to discuss emergency planning for maritime accidents involving radioactive material.
- 2.10 A report on the Inhalation Dose Assessment for the Remediated Land at Maralinga was completed for the Department of Industry, Science and Resources.

Regulatory Branch

- 2.11 Four senior regulatory assessment officers attended the NSW Major Hazards Facilities one-day seminar in Sydney on 25 July. The seminar was sponsored by the NSW Department of Urban Affairs and Planning.

26th Annual Conference of the Australasian Radiation Protection Society

- 2.12 The Australasian Radiation Protection Society held its annual conference from 17 to 20 September on the Gold Coast in Queensland. These meetings provide the major domestic forum for radiation protection professionals to exchange ideas and information on all aspects of protection from ionising and non-ionising radiation. Accordingly, ARPANSA staff contributed significantly to the scientific program and the discussions after presentations and during workshops. ARPANSA also displayed the agency's scientific services at the trade exhibition.
- 2.13 Key note speakers from ARPANSA during the conference included:
- Daniel Westall for the session on regulation with a paper titled “Will radiation regulation matter in the 21st Century?”.
 - Stephen Solomon for the session on emergency planning a paper titled “Radiation emergency planning in Australia”. The session was chaired by Mr Westall.
 - Peter Thomas for the session on dosimetry and instrumentation with a paper titled “Personal Dosimetry”.

- 2.14 Keith Dessent and Peter Colgan facilitated an information session on the new Code of Practice for the Safe Transport of Radioactive Material. Several members of ARPANSA staff made presentations at the Conference. They were as follows:
- “Review of AS/NZS 2211 laser safety standards - likely changes to product classification and exposure limits” by Wayne Cornelius.
 - “Development of the ARPANSA radiation protection standard on limits of exposure to radiofrequency electromagnetic fields” by Wayne Cornelius.
 - “National survey of residential extremely low frequency exposure”, by Ken Karipidis.
 - “Phototherapy and potential ultraviolet radiation hazards.” by John Javorniczky, Colin Roy and Peter Gies.
 - “Assessment of ultraviolet radiation levels and hazards in industry”, by Peter Gies, Colin Roy and John Javorniczky.
 - “Licensing of ANSTO Radiopharmaceuticals Division facilities”, by Samir Sarkar.
 - “Development of standard licence conditions for non-ionising radiation apparatus”, by Peter Colgan and Howard Ackland.
 - “ARPANSA Licence Conditions Handbook”, by Diane Harrison and Kim Goodrick

Strontium 90 testing program

- 2.15 In response to newspaper reports that bones of Australian children and babies had been sent overseas for “nuclear testing” in the 1950’s and 1960’s, the CEO of ARPANSA directed ARPANSA staff to examine all its records on a national program to measure the radionuclide strontium-90 in human bone tissue. The CEO undertook to report the findings of this investigation to the Minister for Health.
- 2.16 ARPANSA found that the agency had inherited from its predecessors 23,000 data sheets and index cards with information on each person from whom tissue was taken, the institution that provided the tissue, the person’s age (or date of birth) and the date of the post mortem. ARPANSA also found 3,400 samples of ashed remains that were retained after the program had ended.
- 2.17 ARPANSA issued a public report in September. The report includes details of the strontium-90 testing program from 1957 to 1978 to monitor fallout from atmospheric tests and its effect on the Australian population. The report is available at <http://www.arpansa.gov.au/strontium90.htm>.

- 2.18 The CEO of ARPANSA briefed the Minister for Health on ARPANSA's findings. The Minister has sought advice from the Australian Health Ethics Committee of the National Health and Medical Research Council on the ethical and practical considerations that ARPANSA must take into account when determining policy and procedures in relation to the information and samples that it has.

Public communication activities

- 2.19 A public information session was organised at the Lucas Heights Community School Hall from 7 to 9 pm on 19 September on emergency arrangements at the Lucas Heights Science and Technology Centre, the HIFAR research reactor operating licence and the Australian Nuclear Science and Technology Organisation's airborne radioactive discharge authorisation. Invited speakers were Regulatory Branch director Don Macnab, Councillor Genevieve Rankin, who is also the Chair of the Local Emergency Management Committee, Superintendent Henry Karpik from Sutherland Local Area Command (Police Services) and Superintendent Les Gillies from the South Region Two (Fire Service). About 90 people attended the session, some of which was, however, rendered ineffective by disruption.
- 2.20 Brendan Elliott made presentations to members of the Menai Rotary Club and Rose Bay Probus Club in Sydney on ARPANSA, its regulatory functions and the replacement reactor project. Graeme Elliott made presentations to members of the Eltham Rotary Club and Rosanna Rotary Club in Melbourne on ARPANSA's functions and scientific programs.
- 2.21 Graeme Elliott continued to respond to phone inquiries from the public. Most commonly, callers requested information about electricity and health, in particular the association of childhood leukemia with exposure to extremely low frequency electromagnetic radiation. Other topics of interest to the public were the possible health effects of mobile phones and base stations, the Australian strontium-90 testing program, x-ray shielding in clinics and the safe disposal of smoke alarms.

3. Research on Radiation Protection, Nuclear Safety and Medical Exposures to Radiation

Non-ionising radiation

- 3.1 A trial survey of phototherapy cabinets used for medical exposures to ultraviolet radiation was initiated in a number of Sydney hospitals. The results will be used to calibrate the outputs and to produce uniformity in intensity among the various units. A research publication is expected at the end of the project.
- 3.2 The design phase of a proposed national survey on exposure to extremely low frequency electromagnetic radiation was completed. This included statistical analysis of the sample size for the survey and cost estimates.

Medical physics

- 3.3 Keith Wise's report on "Monte Carlo Methods used to Develop the Australian Absorbed Dose Standard", was published as ARPANSA Technical Report 132.
- 3.4 A paper on the characteristics of secondary reference cavity ionisation chambers, "The relative response of NE2561 and NE2611A" by John Boas, Robert Huntley and David Webb, was accepted for publication in *Physics in Medicine and Biology*.
- 3.5 Student Darren Anderson, a fourth year radiography student from Monash University completed an honours project with the Medical Physics Section. He studied the change (increase) in patient dose when a radiographer adjusts technique factors to compensate for poor film processing facilities.

4. Services Provided in Radiation Protection, Nuclear Safety and Medical Exposures to Radiation

Calibration services

- 4.1 There was strong demand for commercial services including the laboratory calibration of RF monitors and probes comprising total invoices of \$18,279. Seventy two jobs were completed covering 33 monitors, 47 probes, 34 personal dosimeters and six other sensors. Technical issues in the quality management of electromagnetic radiation calibration services were addressed.

Fabric testing and labelling

- 4.2 Ultraviolet Protection Factor testing, licensing and labelling of fabrics remained at significant levels. A total of 243 fabric samples were tested, 21 trademark licences were granted and 558,500 labels were issued, generating \$45,583 in revenue.

QA program for radiopharmaceutical products

- 4.3 The quality assurance program for radiopharmaceutical products used by hospital nuclear medicine departments found no non-compliance in the products tested.

5. Council and Committee Operations

Radiation Health and Safety Advisory Council

- 5.1 The Council met on 3 August at ARPANSA's Miranda office in Sydney. A summary of the meeting is at http://www.health.gov.au/arpansa/rhsac_m2.htm.

Radiation Health Committee

- 5.2 The Radiation Health Committee met from 18 to 19 July at ARPANSA's Yallambie office in Melbourne. A summary of the meeting is at http://www.health.gov.au/arpansa/rhc_mt.htm.

Nuclear Safety Committee

- 5.3 The Nuclear Safety Committee met from 5 to 6 July at ARPANSA's Miranda office in Sydney. A summary of the meeting is at http://www.health.gov.au/arpansa/nsc_mt.htm.

Radiofrequency (RF) Exposure Standard Working Group

- 5.4 The working group reviewed all 67 public submissions received on the draft standard on radiofrequency exposure at its meetings from 10 to 11 July, 15 to 16 August and 6 September and produced responses to the submissions. A final draft of the standard will be prepared for consideration by the working group at a meeting from 11 to 12 October for submission to the Radiation Health Committee.

6. Regulation

Standards

- 6.1 ARPANSA's responses to public submissions on the *Regulatory Assessment Principles for Controlled Facilities*, and *Regulatory Assessment Criteria for the Design of New Controlled Facilities and Modifications to Existing Facilities* has been completed and is available on the ARPANSA website at http://www.arpansa.gov.au/pub_sub.htm#rap_comm.

Licensing

Licensing policy for sources

- 6.2 The Regulatory Branch amended its licensing policy from "single licence, single source" to a policy of licensing multiple sources in a single licence. A source licence now lists the dealings authorised under the licence and requires the licence holder to maintain a current source inventory for each dealing and provide an updated quarterly inventory to the CEO of ARPANSA. The change is based on the need to ensure that licensing is efficient, cost-effective and commensurate with the risks associated with the type of source and dealings being licensed.

Licence Applications

- 6.3 Three new source licence applications and one new facility licence application were received, making a total of 127 licence applications since August 1999.

Application Assessment

- 6.4 Reviews of licence applications resulted in the following 18 licensing actions:
- twelve source licences were issued to 12 divisions of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) following completion of assessment of 18 applications;

- a revised source licence was issued to the Australian Customs Service (ACS), incorporating two previously issued source licences and five new source licences. A licence to site a controlled facility was also issued to the ACS;
- a revised source licence was issued to the Australian Quarantine and Inspection Service, incorporating seven previously issued source licences and the completed assessment of one new application;
- a revised source licence was issued to the Australian National University, incorporating a previously issued source licence and the completed assessment of one new application;
- a source licence was issued to the Australian Surveying and Land Information Group (AUSLIG);
- a source licence was issued to Silex Systems;

Import Permits

- 6.5 The Regulatory Branch processed 104 import release permits for the importation of non-medical radioisotopes. The Radiopharmaceutical Section issued 91 import release permits for the importation of medical radioisotopes.

Australian Nuclear Science and Technology Organisation (ANSTO) - Replacement Research Reactor

- 6.6 The Regulatory Branch completed a preliminary review of ANSTO's application for a facility licence to construct the proposed replacement research reactor. This resulted in 1,428 questions being sent to ANSTO seeking clarification and additional information on its application and its Preliminary Safety Analysis Report. Regulatory Branch's questions and ANSTO's responses are available at <http://www.arpansa.gov.au/rrrp.htm#answers>.
- 6.7 The report of the International Atomic Energy Agency peer review of the Preliminary Safety Analysis Report for the proposed replacement reactor was released on 20 July and made available on the ARPANSA website at http://www.arpansa.gov.au/mr_psar.htm.
- 6.8 Information on the public submissions received on ANSTO's application for a facility licence to construct the replacement reactor is available at http://www.arpansa.gov.au/mr1_111001.htm.

ANSTO Waste Operations

- 6.9 A detailed assessment of ANSTO's application for a licence authorising waste operations and technology development was conducted. ANSTO made a second stage submission for an extension to the existing Waste Operations and Technology Development Facility to construct a building for treatment and packaging of low level radioactive wastes. The individual processes for packaging and treatment will require separate licensing applications. The Regulatory Branch is reviewing the

submission as a category one modification under the transitional arrangements in place until a decision is made on the Waste Operations licence application.

CSIRO

- 6.10 Regulatory advice was provided to several CSIRO Divisions regarding the transfer and disposal of sources.

Parks Australia North

- 6.11 Approval was given for additional interim works to stabilise uranium mill tailings arising from past uranium mining and exploration activities in the area of the South Alligator River.

Australian Antarctic Division

- 6.12 Regulatory advice was provided on the disposal of waste arising from a minor contamination incident.

Australian Defence Force and Department of Defence

- 6.13 As required by a condition attached to the Defence Source Licence issued by the CEO of ARPANSA in May, a central radiation safety officer has been appointed within the Defence Safety Management Agency. This officer provides a link between ARPANSA and Defence and enables Defence policy and audit matters to be coordinated between the two agencies.

Surveillance

Department of Defence

- 6.14 ARPANSA inspectors undertook seven audits and inspections at Defence sites in Queensland. The inspection results have been discussed with Defence personnel, and will be presented to the Defence Safety Conference in November 2001.

ANSTO Airborne Radioactive Discharges

- 6.15 All airborne radioactive discharges reported by ANSTO for the period 26 June to 18 September remained less than the relevant notification levels under the Licence authorisation issued in June.

ANSTO Liquid Radioactive Discharges

- 6.16 The Regulatory Branch reviewed ANSTO's reports of liquid radioactive discharges from the Lucas Heights Science and Technology Centre from June to August and found that they complied with the Trade Waste Agreement of 31 May between Sydney Water and ANSTO.

ANSTO Replacement Research Reactor Site Licence

- 6.17 The seventh quarterly report by ANSTO on their compliance with the “Replacement Research Reactor Facility Licence, Site Authorisation”, was received. Some of these matters are currently under consideration by ARPANSA as part of the assessment of ANSTO’s application for a licence to construct the replacement reactor.
- 6.18 The September 1999 Licence to Prepare a Site was amended in August to include “Persons covered by this Licence are the Licensee, employees of the Licensee, Commonwealth Contractors and employees of Commonwealth Contractors”.

ANSTO Source Licences

- 6.19 ARPANSA investigated an incident reported in the previous quarter at the Isotope Handling Bay within the Radiopharmaceuticals Division of ANSTO, in which an iridium-192 source was dropped, and was subsequently stepped on by staff during attempted recovery. A series of administrative and communication issues resulted in the incident. ANSTO has submitted a plan for improvement.

Criticality

- 6.20 The report on the review of ANSTO’s criticality safety was finalised and a number of recommendations have been made.

HIFAR Plant Modifications and Engineering Projects

- 6.21 The quarterly report on the status of the HIFAR Plant Modification and Engineering Projects was reviewed. Modifications to level monitoring systems of the reactor tank and a drain tank were completed. One Safety Category I modification related to measurement of secondary cooling water flow was approved.

Abnormal Occurrences at ANSTO’s Nuclear Installations

- 6.22 The Regulatory Branch is notified of all abnormal occurrences at ANSTO’s nuclear installations. No abnormal occurrence classified as Level 1 or above on the International Nuclear Event Scale (all others have no safety significance) occurred during the quarter.

Maralinga Licence Conditions

- 6.23 The final AEA Technology Report on the intrusion scenarios for the burial sites at Maralinga was received. This report was placed on the ARPANSA website. Also a plan for the ground water monitoring program at Maralinga was received from the Department of Industry Science and Resources. This was agreed to by ARPANSA and borehole drilling is expected to commence in November 2001. These actions satisfy the remaining two time-related licence conditions for the facility.

7. International Liaison

- 7.1 The Ionising Radiation Standards Section coordinated Australia's contribution to update entries for Australian radiotherapy centres in the International Atomic Energy Agency's DIRAC (International Directory of Radiotherapy Centres) database. Since 1959, the International Atomic Energy Agency has maintained a register of radiotherapy hospitals and clinical institutions having radionuclide and high-energy teletherapy machines. The first edition of the Directory was published in 1968. The updated database will be available on the International Atomic Energy Agency web site in the near future.
- 7.2 Colin Roy presented a paper entitled "Sun Protective Clothing: 5 Years of Experience in Australia" (Authors: Peter Gies, Colin Roy and Alan McLennan) at the Eighth World Congress on Cancers of the Skin Satellite Symposium, "Dress up for Sun Protection: Standards and Practices" on 18 July in Zurich, Switzerland.
- 7.3 Stephen Solomon visited the Korean Institute of Nuclear Science to consult on the results of the Korean survey of radon in dwellings.
- 7.4 Alan Melbourne participated as an expert lecturer in the International Atomic Energy Agency "Regional Workshop on Regulatory Control of Radiation Sources: Notification, Authorisation, Inspection and Enforcement", held in Jakarta from 9 to - 13 July. Twenty-two participants from twelve countries attended the workshop.
- 7.5 Ches Mason attended a meeting of the International Commission on Radiological Protection and its Committees in The Hague. Dr Mason is a member of Committee 4, which deals with the application of the Commission's recommendations.
- 7.6 Ches Mason provided consultancy services to the International Atomic Energy Agency in Vienna to develop a new Safety Standards Series publication on Safety Fundamentals, covering nuclear, radiation, radioactive waste and transport safety. Dr Mason gave a presentation at the Australasian Radiation Protection Society Annual Conference on the International Atomic Energy Agency's overall program for safety standards development.
- 7.7 The CEO of ARPANSA and Don Macnab visited the Egyptian research reactor, which was designed and constructed by INVAP S.E, the main contractor for the proposed replacement reactor. Further details on the findings of the visit are on the ARPANSA web site at http://www.arpansa.gov.au/mr1_051001.htm.
- 7.8 The CEO also visited nuclear installations in France and the UK and attended the 45th session of the General Conference of the International Atomic Energy Agency.
- 7.9 The Regulatory Branch completed a questionnaire from the OECD Nuclear Energy Agency's Committee on Nuclear Regulatory Activities concerning the approach to self-assessment activities of licensees.

John Loy
CEO
7 November 2001