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RAC

RADIATION ADVISORY COUNCIL

ANNUAL REPORT 2006–07

Published by:

Department of Environment and Climate Change NSW

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ISSN 1323–4072

DECC 2007/480

December 2007

Printed on recycled paper

The Honourable Verity Firth
Minister Assisting the Minister for Climate Change, Environment and Water (Environment)

Dear Minister

It is my pleasure to forward to you for presentation to the Parliament of New South Wales the Annual Report of the Radiation Advisory Council for the period 1 July 2006 to 30 June 2007. This report has been prepared in accordance with the provisions of the *Radiation Control Act 1990*.

Yours sincerely

A handwritten signature in cursive script, appearing to read "Lamberton", followed by a period.

CRAIG LAMBERTON

Chairperson
Radiation Advisory Council
November 2007

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Chairperson's review

The Radiation Advisory Council (the Council) is established under the *Radiation Control Act 1990* (the Act). The Council held 6 meetings during the year and provided advice to the Department of Environment and Climate Change (DECC), (formerly the Department of Environment and Conservation) on the administration of the Act and issues relating to policy and the regulation of radiation safety.

The Council started its year endorsing its strategic direction priorities for the next three years and its work program for 2007. Over the next three years, Council will focus its attention on a review of the regulatory model for radiation control in NSW. This will help ensure an efficient and effective regime for controlling risks to human health and the environment; identify emerging issues in radiation protection; and identify procedures and rules to prevent or minimise dangers arising from radiation exposure in the environment.

During the year the work and activities of the Council that were of particular significance included:

- the review and endorsement of the proposed amendments to the Radiation Control Regulation 2003
- the establishment of two additional committees – the National Directory Committee and the Regulatory Review and Reform Committee – to consider specific regulatory and policy topics in alignment with the Council's strategic priorities
- the review of four draft Australian Radiation Protection and Nuclear Safety Agency Codes of Practice, by both the Council and its National Directory Committee. These documents will eventually form part of the National Directory for Radiation Protection (the Directory).
- the review and endorsement of the work of the Council's Shielding, Assessment and Verification Committee, specifically the *Draft Guideline: Design and Assessment and Verification of Shielding*; a proposal for the accreditation of consulting radiation experts (CREs) for the verification of radiation safety of premises; and a revision of the Council's policy on x-ray protective clothing
- the review of the work of the Regulatory Review and Reform Committee in the development of a public discussion paper for a comprehensive non-statutory review of the *Radiation Control Act 1990*
- consideration of the work of the Exemption Levels for Radionuclides Committee – specifically two draft papers: *Exclusion, Exemption, Reporting and Regulation of Practices Involving Ionising Radiation – What impact does the adoption by ARPANSA of the BSS exemption values have on the NSW Regulations?* and *Threshold for Regulating Radioactive Material in NSW*, which are to be used to develop an options paper for Council's consideration in the next period
- input into the development of the national radiation security code. Council was also briefed on Exercise Kip – a multi-agency exercise in dealing with the consequence of a radiological dispersion device
- a visit to the Royal Prince Alfred Hospital to review new and emerging technologies such as the hospital's cyclotron and new computed tomography equipment
- the review of Council's corporate governance arrangements and, in particular, the change of Council's normal meeting schedule from monthly to every second month with the intervening period used for Council's committees to meet.

In addition, the Council continued to provide advice to DECC on matters relating to licensing, registration, accreditation of CREs, investigation of radiation accidents and incidents, and the assessment of radiation safety courses.

Council has had a very productive year and I wish to thank all the members of Council for their valuable contributions to the work of providing advice to DECC and the Minister. I appreciate their willingness to serve in the interest of radiation protection in NSW and I would also like to acknowledge the contributions of DECC staff in their continued support to the Council and its committees.



CRAIG LAMBERTON

Chairperson

September 2007

Responsibilities of the Council

The Radiation Advisory Council (the Council) is constituted under section 29 of the *Radiation Control Act 1990* (the Act).

The object of this Act is to:

... secure the protection of persons and the environment from exposure to harmful ionising and non-ionising radiation to the maximum extent that is reasonably practicable, taking into account social and economic factors and recognising the need for the use of radiation for beneficial purposes.

Section 33(1) of the Act requires that 'as soon as practicable after 30 June (but on or before 31 December) in each year, the Council is to prepare and forward to the Minister a report of its work and activities for the 12 months ending on 30 June in that year'.

Constitution of the Council

The Council consists of 16 members appointed by the Minister. Membership of the Council consists of:

- (a) the Director General or a member of staff of the Authority, who is to be the Chairperson
- (b) a medical practitioner who is a specialist in radiology
- (c) a radiographer with expertise in the field of human diagnostic radiography
- (d) a person with expertise in the industrial uses of radiation
- (e) a person with expertise in health physics
- (f) a medical practitioner who specialises in nuclear medicine
- (g) a person with expertise in non-ionising radiation
- (h) a person with expertise in occupational health and safety
- (i) a person who is a legal practitioner of at least 7 years' standing
- (j) a person who represents community interests
- (k) an officer of the Department of Health
- (l) a radiation oncologist
- (m) a medical physicist
- (n) an officer of the WorkCover Authority
- (o) a person with expertise in naturally occurring radioactivity
- (p) a person chosen by the Minister.

Functions of the Council

Section 30 of the Act prescribes the functions of the Council, namely:

- (1) The Council is to advise the Minister on:
 - (a) proposed amendments to this Act and the making, amendment or repeal of regulations under this Act, and
 - (b) the administration of this Act and the regulations, and
 - (c) measures to prevent or minimise the dangers arising from radiation, and
 - (d) the granting of exemptions authorised by the regulations for periods exceeding 60 days, and
 - (e) such other matters relating to radiation safety as the Minister considers appropriate.
- (2) Any such advice may be given either at the request of the Minister or without any such request.
 - (2A) The Council may at any time, and must on the request of the Authority, provide advice to the Authority about licences, registrations and accreditations under Part 2.
 - (2B) The advice provided to the Authority may be general or specific, as the circumstances require.
- (3) The Council has such other functions as are conferred or imposed on it by or under this or any other Act.

The Department of Environment and Climate Change (DECC) exercises responsibilities and powers in the name of the Environment Protection Authority (EPA). DECC officers of the Hazardous Materials and Radiation Section support the work of the Council. The term EPA and DECC will therefore be used interchangeably throughout this document.

Meetings of the Council

During the reporting period ending 30 June 2007, the Council met 6 times. The attendance of members at meetings during this period is shown in Table 1.

The Memorandum of Understanding (MOU) between the Council and the EPA is found in Appendix 1. The Council reviewed the MOU at the November 2006 meeting but no significant changes were proposed. The MOU was therefore not amended.

TABLE 1
Members of the Radiation Advisory Council and meeting attendance

<i>Member</i>	<i>Appointed position</i>	<i>Meetings attended</i>	<i>Meetings eligible to attend</i>
Mr Craig Lamberton	Chairperson	6	6
Mr Simon Smith	Deputy		
Dr Philip Pasfield	Radiologist	4	4
Dr Andrew Scott	Deputy	0	2
Mr John Robinson	Diagnostic radiographer	4	5
Mr Glen Burt	Deputy	1	1
Mr Colin Hockings	Expert in industrial uses of radiation	4	6
Mr Michael Carter	Expert in naturally occurring radioactivity	6	6
Mr Brian Holland	Deputy	0	0
Mr Jeremy Pigott	Health physicist	3	3
Dr Geoffrey Schembri	Physician in nuclear medicine	2	6
Assoc. Prof. Lee Collins, AM	Expert in non-ionising radiation	6	6
Mr Howard Ackland	Deputy	0	0
Ms Tara McCarthy (Resigned 28 February 2007)	An officer of WorkCover Authority NSW	0	0
Mr Mark Moskvitch	Deputy	5	6
Dr Ludmilla Robinson	Legal practitioner	6	6
Mr John Clark	Deputy	0	0
Dr Cameron Hazlehurst	Community representative	6	6
Ms Lea Maher	Deputy	0	0
Ms Kathy Meleady	An officer of the Department of Health	3	3
Dr Kerry Chant (Appointed 21 August 2006)	Deputy	2	3
Dr Mary Dwyer (Appointed 23 June 2006)	Radiation oncologist	3	3
Dr Roland Yeghiaian-Alvandi (Appointed 21 July 2006)	Deputy	2	3
Dr Richard Smart	Medical physicist	5	6
Mr Paul Cardew	Deputy	0	1
Mr Luke Platt	Minister's nominee	5	6
Mr Jon D'Astoli	Occupational health and safety	6	6
Mr David Lloyd-Jones	Deputy	0	0

The Council granted leave to all members who were unable to attend meetings. In many instances, absent members tendered written advice on agenda items that were considered by the Council and its committees.

Committees of the Council

Section 31 of the Act enables the Council to establish committees to help it carry out its functions. The Council has four committees:

- Regulatory Review and Reform Committee
- National Directory Committee
- Shielding Assessment and Verification Committee
- Exemption Levels for Radionuclides Committee.

In July 2006 Council established two committees, the Regulatory Review and Reform Committee and the National Directory Committee, and formalised the terms of reference of the Shielding Assessment and Verification Committee, and the Exemption Levels for Radionuclides Committees. The work of these committees is outlined below:

Regulatory Review and Reform Committee

The Regulatory Review and Reform Committee was established by Council to ensure that the regulation of radiation in NSW is both efficient and effective in controlling risks to human health and the environment.

The role of the committee is to review the basis of the current NSW regulatory regime and provide advice to Council and DECC on potential reform.

The committee will carry out this work by:

- providing views from various stakeholders on the current regulatory framework
- comparing the NSW framework with those in other jurisdictions and overseas
- advising whether the framework is optimal to the needs of NSW
- providing advice on options for the development of a new model if required
- providing advice on any possible options to improve the existing framework, its effectiveness and administrative efficiency.

During the reporting period the committee met on 5 occasions and is in the process of developing a public discussion paper for a comprehensive non-statutory review of the Act. The committee has also considered and agreed to a list of proposals for short-term administrative reforms provided by DECC.

Membership and attendance by members of the committee is shown at Appendix 2.

National Directory Committee

The Council established this committee to assist in the development and implementation of the National Directory for Radiation Protection (the Directory) and to ensure that its proposals are practicable and effective in controlling radiation risks to human health and the environment.

The committee provides advice to Council and DECC on the priorities and suitability of documents within the Directory, and how their outcomes may have an impact (legislative, financial and operational) on DECC, other NSW Government agencies and NSW as a whole.

During the reporting period the committee met on 5 occasions and considered and provided advice to the Council on three draft Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) documents: the code of practice on *Radiation Protection in the Medical Applications of Ionizing Radiation* (originally 3 Codes); *Guidelines for Decontamination following a Radiological Incident*; and the *Radiation Protection Standard for Exposure Limits to Electric and Magnetic Fields 0 Hz - 3 kHz* (the ELF Standard) and its regulatory impact statement.

The committee kept itself informed of the status of ARPANSA publications, working parties and with the work of the Radiation Health Committee (RHC).

Membership and attendance by members of the committee is shown at Appendix 2.

The Shielding Assessment and Verification Committee

The Shielding Assessment and Verification Committee was established to address issues relating to the accreditation of Consulting Radiation Experts (CREs) for the purpose of certifying all premises in NSW where radioactive substances are kept or used and where radiation apparatus is used.

The committee is to carry out this work by determining:

- the technical criteria necessary for the proper safe shielding of registered premises for certification by CREs. This may be achieved through a guideline prepared by the committee, or by referring to technical documents published by professional and government organisations.
- the criteria for the accreditation of these CREs by DECC. The accreditation criteria will depend on the level of hazard of the practices/premises that the CREs are to certify as being compliant with the requirements of the Radiation Control Regulation 2003.
- a classification system of the CREs to be accredited.
- an administrative mechanism whereby DECC, in collaboration with the Council, can issue these CREs with a Certificate of Accreditation.

During the reporting period the committee met on 6 occasions and completed the requirements of its terms of reference, and additional work as requested, by providing the Council at its June 2007 meeting with:

- the *Draft Guideline: Design and Assessment and Verification of Shielding*
- a proposal for accreditation of CREs for premises
- a revised Council policy on x-ray protective clothing.

The Council endorsed the Committee's recommendations and the release of the draft guideline for public comment at its June 2007 meeting.

Membership and attendance by members of the Committee is shown at Appendix 2.

Exemption Levels for Radionuclides Working Group

With the endorsement of the Directory, NSW is obliged to look at adopting the exemption levels specified in Schedule 4 of the Directory as a basis for setting regulatory thresholds. These threshold levels vary significantly from those currently imposed by the Radiation Control Act.

The working group was established with the principal purpose of examining the implications of adopting the schedule of exemption levels in the Directory and examining the merits of continuing to exempt activities according to the current thresholds set by the Radiation Control Act.

During the reporting period the group met on 6 occasions and prepared two draft papers: *Exclusion, Exemption, Reporting and Regulation of Practices Involving Ionising Radiation – What impact does the adoption by ARPANSA of the BSS exemption values have on the NSW Regulations?*, and *Threshold for Regulating Radioactive Material in NSW* considered by Council at its June 2007 meeting. The Committee is currently in the process of developing an options paper based on the two draft papers for consideration by the Council.

Membership and attendance by members of the Committee is shown at Appendix 2.

Council's strategic direction 2006 to 2009

The Council at its July 2006 meeting endorsed its strategic direction priorities for the next three years, during which time it will focus on:

- reviewing the regulatory regime for radiation control in NSW to ensure that there is in place efficient and effective controls to prevent risks to human health and the environment
- identifying emerging issues in radiation protection
- identifying procedures and rules to prevent or minimise dangers arising from radiation exposure in the environment. Council was provided with an update on the status of the DECC radiation compliance program.

At this meeting, the Council also endorsed a change to its normal meeting schedule from meeting every month to every second month to allow the new committees to meet during the intervening months.

During the reporting period Council also reviewed its corporate governance arrangements and endorsed its work program for 2007.

National uniformity

In August 1999, the Australian Health Ministers' Conference agreed that the approach to national uniformity would be through the development of the Directory, which would allow all jurisdictions, including the Commonwealth, to achieve national uniformity in their radiation protection frameworks.

The Directory is being developed through the RHC and facilitated by ARPANSA. The first edition of the Directory was endorsed by the Australian Health Minister's Advisory Conference in May 2005. A draft of the second edition is scheduled to be released for public comment in the latter part of 2007.

Under the National Competition Policy (NCP) Agreements jurisdictions have agreed that documents referenced in Schedule 11 of the Directory are to be specifically adopted by each jurisdiction within their regulatory frameworks.

During the year, the Council provided DECC with advice on four ARPANSA draft documents issued for public comment and intended for inclusion in the Directory. These were:

- three draft codes of practice: *Draft Code of Practice for Radiation Protection in Radiotherapy*, *Draft Code of Practice for Radiation Protection in Nuclear Medicine*, and *Draft Code of Practice for Diagnostic and Interventional Radiology*

After consultation with jurisdictions ARPANSA decided to combine the three codes into one code with three safety guides. The Council's National Directory Committee at the time of writing this report was in the process of considering the *Draft Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation*.

- *Draft Radiation Protection Standard for Exposure Limits to Electric and Magnetic Fields 0 Hz - 3 kHz* and accompanying regulatory impact statement

During the period the Council also provided advice to DECC on the:

- regulation of solaria: the Council recommended that that the matter of regulating operators of solaria in NSW be reviewed by the Council once the national working group established by ARPANSA to investigate solaria provides its findings
- inclusion of controls of the transport of radioactive substances in the *Australian Dangerous Goods Code (DGC)*: the Council agreed in principle that radioactive substances should be incorporated in the DGC. However, the Council was of the opinion that it is important that the ARPANSA *Code of Practice for the Safe Transport of Radioactive Material* continue to remain as a stand alone document for use by the radiation community.
- RHC Statement: *Clean-up Criteria Following a Radiological Incident*.

During the period the Council was provided with:

- a presentation on the *Code of Practice on the Security of Radioactive Sources – Moving Towards Implementation*
- a presentation on the outcomes of *Exercise KIP – an emergency management exercise, State emergency response to a Radiological Dispersion Device involving the NSW Police, NSW Fire Brigades, Ambulance, Environment Services (DECC and Commonwealth agencies ANSTO and ARPANSA)*
- courtesy copy of the revised *Diagnostic Compliance Testing Workbooks* developed by the Radiological Council of Western Australia
- progress reports on the National Directory Radiation Protection Series publications
- a progress report on the labelling of radiopharmaceuticals
- progress reports on the development and construction of the an environment science facility.

International radiation documents

During the reporting period Council considered the following documents:

- *Draft Recommendations of the International Commission on Radiological Protection (ICRP) 02/276/06*

On Council's invitation, Mr Peter Burns, Director of the Environmental and Radiation Health Branch, ARPANSA, and the Australian representative to the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and current Chair of that Committee, gave a presentation on the revised (ICRP) 2007 *Recommendations* at Council's February 2007 meeting.

- International Atomic Energy Agency (IAEA) Draft Safety Standard: Disposal of Radioactive Waste
- IAEA Draft Safety Standard: Pre-disposal Management of Radioactive Waste
- IAEA Ionising Radiation Warning Sign.

Review of radiation control legislation

During the reporting period, the Council provided advice to DECC on proposed amendments to the Radiation Control Regulation 2003 (the Regulation), and endorsed the following proposed amendments:

Significant amendments to the Regulation included the:

- exemption of dental professionals from the requirement to hold a licence for general dental radiography (not including computed tomography (CT) and orthopantomography (OPG))
- introduction of provisions to exempt the transfer of radiation professionals and equipment from other jurisdictions from the requirement for authorisations (licences and registrations) in an emergency
- introduction of a three-year licence period whilst keeping a one-year licence option.

Minor amendments to the Regulation included the:

- clarification of reporting requirements for radiation accidents
- addition of another class of occupationally exposed persons (servicing and maintenance personnel)
- addition of certain low-risk items to the Schedule of materials exempt from registration and licensing.

Of particular importance was Council's deliberation of the proposed exemption of dental professionals (dentists, dental hygienists and dental therapists) from the need to be licensed by DECC for standard dental x-radiography. The Council endorsed the proposal on the basis that standard dental radiography is an extremely low-risk activity and that these professionals continue to be regulated through the *Dental Practice Act 2001*, requiring registration with the Dental Board. The Council also noted that radiation safety oversight will continue to be applied under the Radiation Control Act through the requirement to register dental x-ray equipment with the EPA;

and by the mandatory requirement for compliance with the ARPANSA *Code of Practice and Safety Guide for Radiation Protection in Dentistry* (RPS. No.10), which is scheduled to be included in the Directory in the near future.

The 2001 NCP review of radiation protection legislation also questioned the need to regulate standard dental radiography. This was the subject of one of the recommendations of the NCP review's final report (Recommendation No. 13).

During the reporting period Council also provided advice to DECC on the proposed short-term administrative reforms proposed by DECC as part of the process of the regulatory reform, including:

- flexibility in the renewal period for licenses that have lapsed
- on-line verification of compliance with the requirements of registration of apparatus, sealed source devices, and premises
- combining the current sell/possess and use licences. An authorisation to sell/possess is to be included in each individual licence to use, to address the issue of sole traders. A licence requirement will be maintained for companies that sell.
- synchronisation of authorisation renewals within particular regulated organisations
- an upgrade of the radiation web page to increase usage.

Licences to use, possess and sell radioactive substances and radiation apparatus

Section 6 of the Act regulates the use and sale of radioactive substances and radiation apparatus. Specifically, section 6(2) prohibits a person from using, selling or possessing radioactive substances or radiation apparatus unless they hold a current licence and comply with its conditions. An exemption from section 6 of the Act for specified categories of persons is provided in clause 8 of the Regulation.

The EPA is the authority for dealing with licence applications and variations to licences made under Part 2 of the *Radiation Control Act 1990*. It is empowered by section 9A of the Act to seek and consider the advice provided by the Council on such matters. The Council is empowered under section 30 of the Act to provide generic or specific advice to the EPA on Part 2 applications.

The MOU between the Council and the EPA sets out the way in which the two parties agree to work with each other on determining licence applications. During the reporting period, the Council advised DECC on the granting of all non-routine licence applications and recommended inclusions to its standing advice on routine licence applications.

During the reporting period the Council endorsed the following four radiation safety courses for the purposes of licensing:

- *General Radiation Awareness and Radiation Devices* conducted by Australian Radiation Services Pty Ltd for the purposes of licensing individuals to use radioactive substances when installing and/or servicing a device containing a radioactive substance (S10)
- *Computerised Tomography for Nuclear Medicine* (NMT415) conducted by Charles Sturt University for the purposes of licensing nuclear medicine technologists to use computed tomography for the purposes of nuclear medicine technology (IA16/IA16T)

- *Radiation Safety Industrial – NDT Sector Gamma and X-Ray (EA612)* or the purposes of licensing individuals to use industrial radiography (IA6/S6)
- *Radiation Protection for Operators of Bone Densitometry Units* conducted by Medical Scientific Services Pty Ltd for the purposes of licensing individuals to use radiation apparatus for dual energy x-ray absorptiometry for the purposes of bone mineral analysis

In addition Council:

- requested an investigation of nuclear medicine physicians' licence with respect to the terms of supervision of technologists who use CT apparatus in conjunction with PET and SPECT nuclear medicine cameras. The Council reviewed the advice and considered that the current licensing system was appropriate.
- endorsed the use of the hand held NOMAD Examiner 'dental apparatus' on the basis that the apparatus be used with a stand where practicable. This requirement is consistent with the advice provided by the RHC to all jurisdictions.
- endorsed the licensing for the use of Corporate Risk Solutions 'Compass Body Scanner' in NSW and that the licence criteria and the conditions for the licence be provided to Council for consideration when the need arises.
- endorsed the sale of the CastScope Cast and Bandage Scanner in NSW, and that users of the apparatus be subject to minimal licence criteria and conditions for use, and the apparatus be considered for exemption from licensing for use in the next review of the Regulation.
- endorsed the current requirements for licensing and registration for the use, sale and possession of the MetriScan Bone Density System.
- provided advice on the application of clause 8 of the Regulation in relation to a dual qualified nuclear medicine physicists/radiologist. DECC indicated that this particular applicant was permitted to give approvals for exemption from licensing on the basis of fulfilling the criteria as set by Council.

For the reporting period ending 30 June 2007, DECC issued 1935 licences, including 111 licences for sale/possession and 1824 licences to use radiation apparatus or radioactive substances. The total number of licences (1935) is the number of actual individual new applications that resulted in a licence being issued.

Table 2 lists the licence conditions issued by occupational category. A licence may contain more than one condition and therefore the total number of licence conditions issued in Table 2 is greater than the number of actual licences issued.

During 2006–07 DECC also renewed 11,963 licences – 11,303 licences to use and 660 licences to sell/possess radioactive substances or radiation apparatus.

At the end of the reporting period there were 13,898 active licences.

TABLE 2 Number of licence conditions issued in 2006–07 listed by occupational category		
Occupational category	Radioactive substances	Ionising radiation apparatus
Dental	0	425
Medical—specialist	22	88
Medical—other and related	203	790
Servicing/installation	27	68
Educational	12	6
Safety	2	0
Management	3	2
Scientific/research	165	47
Engineering	31	24
Technical	208	46
Other	1	13
Company (licence to sell)	47	87
Rural	1	0
Miscellaneous	0	193
Veterinary	51	35
Total	742	1876

Table 3 summarises the number of new licences issued by DECC during the period 2000–01 to 2006–07.

TABLE 3 Number of new application licences issued from 2000–01 to 2006–07			
Period	Radioactive substances	Radiation apparatus	Total
July 2000–June 2001	299	1255	1554
July 2001–June 2002	397	1167	1564
July 2002–June 2003	481	1418	1899
July 2003–June 2004	686	1947	2633
July 2004–June 2005	531	2010	2541
*July 2005–June 2006	873	1870	2743
July 2006–June 2007	742	1876	2618

* Figures from July 2005 indicate the number of licence conditions issued, whereas figures prior to July 2005 indicate the number of licences issued.

Registration of radiation apparatus, sealed source devices, and premises

Section 7 of the Act requires registration of sealed source devices and certain prescribed radiation apparatus. Section 8 of the Act requires premises to be registered where radioactive substances, which are not contained in a sealed source device, are kept or used.

The purpose of registration is to:

- ensure that all, radiation apparatus, sealed source devices and premises in which radioactive substances are kept or used are registered and comply with specified minimum standards, which are designed to optimise the protection of individuals and the environment from exposure to ionising radiation
- enable up-to-date records to be kept of all sealed source devices, certain radiation apparatus and premises where radioactive substances are kept or used.

The EPA is the authority for dealing with applications for registration made under Part 2 of the Act. It is empowered by section 9A of the Act to seek and consider the advice provided by the Council on such matters. The Council is empowered under section 30 of the Act to provide generic or specific advice to DECC on Part 2 applications. The MOU between the Council and the EPA addresses the way in which the two parties agree to work with each other on determining registration applications.

During the reporting period Council provided advice to DECC on:

- including certain low risk items to the Schedule of materials exempt from registration (Amendment Regulation)
- the registration of the hand held NOMAD Examiner ‘dental apparatus’ recommending that a registration only be issued to an owner if they provided sufficient information to DECC for the need to use a hand held dental apparatus. Council’s recommendation was consistent with the advice provided by the RHC to all jurisdictions.

Table 4 provides a list of items that are currently registered by DECC and their registration commencement dates. A summary of each registration category and the number of registrations in each category is provided below

TABLE 4 Registration categories and commencement dates	
Registration category	Commencement date
Diagnostic Imaging Apparatus	11 August 2000
Cyclotrons	1 December 2001
Therapy Apparatus	1 February 2004
Sealed Source Devices	1 July 2004
Premises where radioactive substances are kept or used	1 July 2004

Registration of diagnostic imaging apparatus

During the year ending 30 June 2007, DECC issued 734 registrations and renewed 893 registrations for diagnostic imaging apparatus as shown in Table 5.

TABLE 5		
Number of diagnostic imaging apparatus registered between July 2006 and June 2007		
<i>Equipment type</i>	<i>Registrations</i>	<i>Renewed registrations</i>
Fixed Dental Radiography	374	200
Fixed Radiography	92	126
Fixed Fluoroscopy	10	28
Fixed Radiography/Fluoroscopy	22	110
Fixed Mammography	16	97
Computed Tomography	56	98
Dental Computed Tomography	2	0
Bone Mineral Densitometry	16	9
Mobile Dental Radiography	6	5
Mobile Radiography	61	78
Mobile Fluoroscopy	21	65
Mobile Radiography/Fluoroscopy	7	28
Mobile Mammography	0	12
Panoramic Radiography	51	37
Total	734	893

Table 6 gives the number of new diagnostic imaging apparatus registered by DECC between 2000 and 2007.

TABLE 6							
Number of new diagnostic imaging apparatus registered between 2000 and 2007							
Equipment type	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
Fixed dental radiography	2592	168	453	381	465	422	374
Fixed radiography	832	134	118	70	80	119	92
Fixed fluoroscopy	69	18	17	10	7	16	10
Fixed radiography/fluoroscopy	246	31	43	41	26	19	22
Fixed mammography	161	31	52	28	34	26	16
Computed tomography	174	22	59	72	55	65	56
Dental CT	0	0	0	0	0	3	2
Bone mineral densitometry	66	9	15	16	11	27	16
Mobile dental radiography	72	6	9	10	6	10	6
Mobile radiography	686	70	92	57	64	101	61
Mobile fluoroscopy	118	18	24	38	33	38	21
Mobile radiography/fluoroscopy	60	10	0	10	14	7	7
Mobile mammography	17	8	8	5	2	4	0
Panoramic radiography	265	43	35	24	24	39	51
Total	5358	568	925	762	821	896	734

The total number of diagnostic imaging apparatus registered by DECC as at 30 June 2007 was 6749. The registration period for diagnostic imaging apparatus varies between 2 or 5 years, depending on the type of apparatus.

Registration of cyclotrons

From 1 December 2001, the Radiation Control Amendment Regulation 2001 prescribed cyclotrons as radiation apparatus that require registration under the Radiation Control Act. As at 30 June 2007, there was only one registered cyclotron. Cyclotrons are required to be registered every two years.

Registration of therapy apparatus

From 1 February 2004, radiation apparatus used or intended to be used for radiotherapy or radiotherapy planning purposes was required to be registered with the EPA under the Radiation Control Regulation 2003. Radiotherapy apparatus are required to be registered every 2 years.

Table 7 summarises the number of registrations for each type of therapy apparatus issued by DECC between 2003–04 and 2006–07.

TABLE 7						
Number of therapy apparatus registered during 2003–04 to 2006–07						
Equipment type	2003–04	2004–05	2005–06		2006–07	
			New	Renewed	New	Renewed
Kilovoltage therapy x-ray (superficial/orthovoltage)	17	0	3	25	0	0
Linear accelerator	38	4	3	9	12	4
Simulator	14	0	0	14	2	0
Total	69	4	6	48	14	4

At the end of the reporting period there was a total of 71 registered therapy apparatus.

Registration of sealed source devices

The registration of sealed source devices commenced on 1 July 2004. The registration period for sealed source devices including fixed radiation gauges is every 2 years.

From 1 July 2004, fixed radiation gauges (FRGs) were classified as 'sealed source devices', in accordance with the modification of the definition of 'sealed radioactive source' under the *Statute Law (Miscellaneous Provisions) Act 2004*.

During the reporting period, DECC registered 693 sealed source devices including FRGs, as shown in Table 8.

TABLE 8				
Number of sealed source devices registered during 2004–05 to 2006–07				
Equipment type	2004–05	2005–06	2006–07	
			New	Renewed
Borehole logging	11	8	5	11
Soil Moisture Density & Moisture Determination	242	30	18	208
Density Gauge	38	22	5	5
Neutron Probe	52	1	7	36
Industrial Radiography	28	14	6	20
XRF Analyser	20	3	2	17
Portable Gauge	9	1	0	8
Beta backscatter thickness testing	1	0	1	0
Self-shielded irradiator	12	2	4	12
Therapy device	16	3	1	8
Analyser	2	0	0	2
Nuclear Medicine Gamma Camera	13	0	0	10
Fixed Radiation Gauges (new registrations)	79	63	58	249
Total	523	147	107	586

At the end of the reporting period there was a total of 1163 registered sealed source devices including FRGs.

Registration of premises where radioactive substances are kept or used

From 1 July 2004, under section 8 of the *Radiation Control Act 1990*, premises on which a radioactive substance that is not contained in a sealed source device is kept or used, must be registered with DECC. The registration period for premises where radioactive substances are kept or used is every 2 years.

Table 9 summarises the number and category of premises registered by DECC between 2004–05 and 2006–07.

TABLE 9
Category and number of premises registered where radioactive substances
are kept or used during 2004–05 to 2006–07

<i>Premises category</i>	<i>2004–05</i>			<i>2005–06</i>			<i>2006–07</i>					
	<i>High</i>	<i>Med</i>	<i>Low</i>	<i>High</i>	<i>Med</i>	<i>Low</i>	<i>New</i>			<i>Renewals</i>		
							<i>High</i>	<i>Med</i>	<i>Low</i>	<i>High</i>	<i>Med</i>	<i>Low</i>
Medicine (Government Hospital)	3	32	29	0	0	0	0	5	6	3	31	25
Medicine (Private Hospital)	1	21	25	0	2	2	0	1	1	1	20	21
Research (Government)	0	1	10	0	2	0	0	0	2	0	0	8
Research (University)	5	18	59	0	5	17	0	0	3	4	16	47
Research (Private)	0	1	10	0	1	3	0	0	3	0	1	7
Radioanalytical	0	1	2	0	0	0	0	0	1	0	1	2
Sterilisation	1	0	0	0	0	0	0	0	0	1	0	0
Store only for radioactive sources	0	3	23	0	2	7	0	0	1	0	3	21
Radiopharmacy	0	1	0	0	0	0	0	0	0	0	0	0
Industrial	1	0	1	0	1	0	0	0	0	0	0	1
Medicine (Private Practice)	0	0	2	0	0	0	0	0	2	0	0	1
Teaching (University)	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	1	2	0	0	0	1	1	0	0	1
Total	11	78	162	2	13	29	0	7	20	9	72	134

At the end of the reporting period, there was a total of 300 registered premises where radioactive substances are kept or used.

Accreditation of radiation experts

Section 9 of the Act provides that the EPA is responsible for accrediting CREs and, through section 9A of the Act, may seek the Council's advice on accreditation matters. The activities of a CRE are set out in the Radiation Control Regulation 2003 as follows:

- (a) advising on the design of premises to be registered under section 8 of the Act in relation to radiation safety requirements,

- (b) assessing plans for premises to be registered under section 8 of the Act in relation to radiation safety requirements for the purpose of certifying compliance with the requirements necessary for registration,
- (c) measuring and assessing radiation doses from ionising radiation apparatus used for medical therapy,
- (d) measuring and assessing radiation doses from ionising radiation apparatus used for diagnostic purposes,
- (e) advising on the design of premises, in relation to radiation safety requirements, in which sealed source devices or radiation apparatus prescribed under section 7(1) of the Act are kept or used,
- (f) assessing plans for premises in which sealed source devices or radiation apparatus prescribed under section 7(1) of the Act are kept or used, for the purpose of certifying compliance with any requirements for registration under section 7(5) of the Act,
- (g) assessing radiation apparatus, sealed source devices and premises that are required to be registered under section 7 or 8 of the Act for the purpose of certifying compliance with the requirements for registration,
- (h) assessing the integrity of any shielding of premises in which sealed source devices or radiation apparatus prescribed under section 7(1) of the Act are kept or used for purposes of certifying compliance with the requirements for registration.

During the reporting year ending 30 June 2007, DECC accredited 2 CREs and renewed 23 CRE accreditations. The number of accreditations is the number of actual individual new applications resulting in an accreditation being issued.

At the end of the reporting period there was a total of 95 accredited CREs.

Table 10 lists the number of accreditation conditions issued for each category and equipment type. These figures represent the number of accreditation conditions issued, not the actual number of accredited CREs. An accreditation may contain more than one condition therefore the total number of accreditation conditions issued is greater than the number of accreditations issued, that is, a person may be accredited for more than one type of apparatus.

TABLE 10				
Number of accreditation conditions issued during 2006–07 and the total number of accreditation conditions as at 30 June 2007				
Category	Equipment	2006–07		Total as at 30 June 2007
		issued	renewed	
Diagnostic imaging	Mammography	0	5	22
	Dental (intra-oral, OPG and cephalometry)	2	9	42
	Dental (intra-oral, OPG and cephalometry)			
	Radiography			
	Fluoroscopy	0	2	6
	Computed tomography			
	Bone mineral densitometry (including veterinary and chiropractic)			
	Radiography			
	Fluoroscopy			
	Computed tomography	2	17	65
	Bone mineral densitometry (including veterinary and chiropractic)			
Industrial	Fixed radiation gauges	0	1	13
Total		4	34	148

CREs accredited from 1 July 2003 are required to renew their accreditation annually.

Radiation accidents

Clause 26 of the Regulation specifies the types of incidents that are classified as radiation accidents for the purposes of the Act. The mandatory requirements imposed on an employer in regard to the reporting and recording of radiation accidents are outlined in clauses 27 and 28 of the Act.

Accidents are normally caused by either deficiency in the relevant management systems, or failures on the part of individuals to implement those systems correctly. Where investigations reveal the former, the Council normally recommends that new procedures be developed and implemented. Where an individual is at fault, the Council usually recommends counselling or further training, if this has not been undertaken by the organisation to prevent the type of incident from recurring. In specific circumstances, enforcement action may be warranted.

The Council may also recommend referral of serious health (medical) related accidents to the Health Care Complaints Commission (HCCC). DECC has standing advice to refer all matters considered significant by the Council to the Commission.

The Council emphasises that it is vital that accidents are consistently reported, not just because of a legal requirement, but because the knowledge gained can help to develop processes and procedures that reduce the risk of similar accidents occurring in the future.

Through the impetus of the National Competition Policy Review of Radiation Protection Legislation the Australian Radiation Incidents Register (Register) has been developed under the direction of the RHC, which was established by the *Australian Radiation Protection and Nuclear Safety Act 1998*. All jurisdictions are required to forward to ARPANSA any radiation accident data they receive, for placement on the national register.

Criteria for the reporting of radiation incidents and accidents to the Council

The Council at its November 2006 meeting endorsed the criteria for the reporting by DECC to the Council of radiation incidents and accidents. The types of occurrences that are regarded as a radiation accident are specified in clauses 26(1) and 26(2) of the Regulation.

However the two clauses are independent of each other, resulting in DECC receiving reports on the misuse of radiation apparatus or maladministration of a radioactive substance regardless of the dose involved as there is no stipulated threshold dose.

The Council agreed that until such time as dose thresholds are implemented, radiation accidents that are reported to DECC that meet the following criteria are to be referred to the Council for advice:

- radiation accidents reported that comply with clause 26(1) Radiation Control Regulation 2003
- radiation accidents of an occurrence meeting the description of a radiation accident in clause 26(2) the Regulation where the dose to a person exceeded the appropriate dose threshold as specified in clause 26(1)(a) the Regulation
- any radiation accident resulting from:
 - (a) a failure or deficiency in any documented procedure or protocol associated with the use of radiation apparatus or a radioactive substance, or
 - (b) the deliberate misuse of a radiation apparatus or radioactive substance.

During the reporting period ending 30 June 2007, DECC was informed of 28 instances where radiation accidents may have occurred. These involved 28 people. The Council considered each case and, where appropriate, made recommendations that, in its opinion, would reduce the risk of a recurrence.

A summary of all the accidents reported to Council and subsequent recommendations of the Council is grouped by categories of accidents and is provided below.

Nuclear Medicine

The Council reviewed the following accidents and the controls that the facilities had instigated to correct deficiencies in their standard operating procedures, and was satisfied with the steps the organisations had taken to prevent the type of incident from recurring.

- A patient received 1090 MBq Tc99m for a liver haemangioma scan instead of Tc99m Colloid for a liver/spleen scan as a result of patient misidentification. The patient received an estimated effective dose of 7.6 millisieverts.
- A patient received 397 MBq Tc99m MDP instead of a Tc99m Sestamibi due to the incorrect vial being selected. The patient received an estimated effective dose of 2.3 millisieverts.
- A patient wrongly received 431 MBq Tc99m Tetrofosmin for a myocardial study due to patient misidentification. The patient received an estimated effective dose of 3.3 millisieverts.
- A patient wrongly received 190 MBq Tc99m Hepatolite for 1 hour instead of 185 MBq Tc99m Hepatolite due to the patient's details not being checked. The patient received an estimated effective dose of 2.7 millisieverts.
- A patient wrongly received 40 MBq Technegas and 240 MBq Tc99m MAA instead of 40 MBq Tc99m DTPA as a result of the wrong study being booked due to confusion regarding the request entry in the referral form. The patient received an estimated effective dose of 3.2 millisieverts.
- A patient wrongly received 92 MBq 201 Tl-Chloride as part of a myocardial perfusion scan instead of a ¹²³I-MIBG scan due to the referral form identifying the wrong test and as the procedure was not confirmed prior to the study. The patient received an effective dose of 20 millisieverts.
- A patient scheduled for a bone scan received 600 MBq Tc99m Pertechnetate instead of 600 MBq MDP due to the incorrect pot being selected. The patient received an effective dose of 4 millisieverts.

The Council did however request that DECC and Council be notified of the outcomes of the Root Cause Analysis investigation.

The Council reviewed the following accidents and recommended that these facilities investigate further controls to correct deficiencies in standing operating procedures to prevent similar accidents from recurring.

- A patient received 120 MBq 201 Thallium instead of Gallium for a bone scan due to the incorrect substance canister being selected. The patient received an effective dose of 20 millisieverts.

The Council specifically recommended that the facility institute a procedure whereby the patient details, the scan requests and radiopharmaceutical details are cross-checked by two persons prior to the administration of the radiopharmaceutical.

- A patient received 230 MBq Tc99m Sestamibi instead of 1000 MBq Tc99m for a bone scan due to the wrong syringe being selected. The patient received an estimated dose of 2 millisieverts.

The Council specifically recommended that the practice institute a procedure whereby the patient details, scan requests and radioisotope details are cross-checked by two people prior to the administration of the radiopharmaceutical.

Therapy

The Council reviewed the following accidents and the controls that the facilities had instigated to correct deficiencies in their standard operating procedures, and was satisfied with the steps the organisations had taken to prevent the type of incident from recurring.

- A patient received an additional head computed tomography (CT) scan due to a positioning error. The repeat scan was required as the initial scan did not include an important reference point required for therapy beam alignment. The patient received an estimated effective dose of 3.3 millisieverts.
- A patient received an additional head CT scan due to a positioning error. The repeat scan was required as the initial scan did not include an important reference point required for therapy beam alignment. The patient received an estimated 3.1 millisieverts.
- A patient received a course of external beam radiotherapy for head/neck cancer where the therapeutic dose of radiation differed from the total prescribed treatment dose. The patient received a total dose of 76 Gray instead of 66 Gray as prescribed. The error occurred due to the incorrect fractions being typed into the apparatus control system.

The Council did however request further information from the facility regarding the way in which the accident was investigated. At the time of writing this report no additional information was received.

- A patient received 33 Gray instead of 36 Gray due to an error in prescription whereby the treatment target was incorrectly localised. No additional dose to the patient was administered.
- A patient underwent the wrong treatment of a single anterior 4 x 4 cm² 6 MV Photon field to the right eye due to patient misidentification. The patient received 3.0 Gray to the depth of dose maximum to the right eye.

The Council noted that the cause of the accident was due to human error and confirmed that it was unlikely that the patient would experience any deterministic effects from the exposure. Referral of the accident to the HCCC was not recommended.

The Council reviewed the following accident and recommended that the facilities investigate further controls to correct deficiencies in standing operating procedures to prevent similar accidents from recurring.

- A patient received 3 out of 5 fractions where the radiation field was offset inferiorly 8 cm from the required location. This resulted in the patient receiving 12 Gray to the wrong location.

The Council requested that further information be provided by the facility regarding the accident. At the time of writing this report no additional information was received.

The Council reviewed the following accident and the controls the facility had instigated to correct deficiencies in its standard operating procedures, and due to the serious nature of the accident the Council recommended that the accident be referred to the HCCC. The accident was referred to the HCCC by DECC.

- A patient received radiotherapy treatment to the left lung instead of right lung due to human error. A review of the accident revealed that the patient received a dose of 39.6 Gray to the left lung apex and mediastinum.

Radiology

The Council reviewed the following accidents and the controls that the facilities had instigated to correct deficiencies in their standard operating procedures, and was satisfied with the steps the organisations had taken to prevent the type of incident from recurring.

- A patient received repeat CT scans of the neck, chest, abdomen and pelvis due to scan images being deleted prior to the scans being archived. The patient received an estimated effective dose of 22 millisieverts.
- A patient wrongly received a chest CT scan due to patient misidentification as the wrong patient details were attached to the request form. The effective dose to the patient was not provided however it is reasonable to assume the dose exceeded 1 millisievert.

The Council did however request that further information be provided to DECC of any pertinent outcomes arising from the root cause analysis. DECC and Council received and noted the root cause analysis report. The effective dose to the patient's breast was estimated to be 15 millisieverts based on the assumptions provided.

- A patient wrongly received a neck CT scan due to patient misidentification as the wrong patient details were attached to the request form. The effective dose to the patient was not provided however it is reasonable to assume the dose exceeded 1 millisievert.

The Council did however request that further information be provided to DECC of any pertinent outcomes arising from the root cause analysis. DECC and Council noted the root cause analysis report.

- A patient wrongly received a CT scan for the chest and abdomen instead of for the abdomen only due to the wrong CT protocol being selected. The patient received an estimated effective dose 4.9 millisieverts.

The Council did however suggest that the facility provide further information on the dose for the purposes of generating awareness. The facility provided DECC and Council with an estimated equivalent dose to the breast as 12 millisieverts.

- A patient wrongly received a CT due to patient misidentification as a result of the patient's details not being checked against the patient's request form. The patient received an estimated effective dose of 7.1 millisieverts. The dose to the head region is estimated at 177 mGy.

The Council did however request that further information be provided to the DECC of any pertinent outcomes arising from the root cause analysis. DECC and Council received and noted the root cause analysis report provided.

- A patient wrongly received a repeat CT angiogram of the renal arteries due to an administrative error. The patient received an estimated effective dose of 23 millisieverts.

The Council did however request that further information be provided to DECC of any pertinent outcomes arising from the facilities review.

- A patient underwent a small bowel series of x-rays although the examination had been cancelled. The accident occurred as the request that the examination be cancelled was omitted from the patient's notes. The estimated effective dose to the patient was assumed to be more than 1 millisievert.

The Council did however request further information be provided to DECC of any pertinent outcomes arising from the facilities review.

- A patient received a CT scan of the pelvis although the examination had been cancelled. The accident occurred as the patient's notes were not read. The estimated effective dose to the patient was 4.2 millisieverts.

The Council reviewed the accident and the controls the facility had instigated to correct deficiencies in its standard operating procedures, and was satisfied with the steps the organisation had taken to prevent this type of incident from recurring.

- A patient incorrectly received a CT scan of the brain due to patient misidentification. The estimated effective dose to the patient was 3.6 millisieverts.
- A patient incorrectly received a CT scan due to patient misidentification. The estimated effective dose to the patient was 3.3 millisieverts.

The Council requested that DECC be advised of any pertinent outcomes arising from the root cause analysis being carried out.

- A patient incorrectly received a CT scan due to the incorrect information on the patient's form. The estimated effective dose to the patient was 18 millisieverts.

The Council requested that DECC be advised of any pertinent outcomes arising from the root cause analysis being carried out.

The Council was surprised that the following accident was reported to DECC due to the low effective dose the patient received and the type of incident. The Council agreed that all reportable accidents continue to be provided to the Council for review and recommended that DECC create a checklist for filtering accidents reported to the Council. The Council at its November 2006 meeting endorsed the types of accidents to be reported to Council as provided at the beginning of this section.

- A patient received a chest x-ray that was not prescribed due to incorrect examination entered into the information system. The patient received an estimated 79 microsieverts.

Follow up actions from accidents reported in the last period:

Nuclear Medicine

- A patient received 800 MBq of Tc99m Sestamibi instead of TC99m MDP for a bone scan due to the wrong radiopharmaceutical being selected and placed in a lead pot with a bone scan label. Initial calculations by DECC estimated that the effective dose to the patient from the wrongly administered radiopharmaceutical was 7.2 millisieverts.

The Council at the time recommended that the facility instigate further controls to correct deficiencies in standard operating procedures, to prevent similar accidents from recurring and requested that further details of the accident be provided. The facility provided the additional information which Council noted.

- A patient received a repeat lung scan due to the first scan showing non-specific distribution of the injected Tc99m throughout the body rather than being concentrated in the lungs. The estimated effective dose from the abnormal radiopharmaceutical behaviour to the patient was calculated at 1.76 millisieverts.

Council requested that further information be provided from the facility once the manufacturer of the radiopharmaceutical had undertaken an analysis of the content of the returned vial. Council received the information and noted the advice.

- The wrong patient was given a whole body scan and received 850 MBq Tc-99m MDP. The error occurred due to the incorrect patient being booked for the scan. The patient received 4.34 millisieverts from the incorrect procedure.

Council recommended that further information regarding the details of the accident be provided as it was not clear to the Council how the error had occurred and as to what steps had been taken to minimise this type of accident. Council received the additional information and was satisfied with the clarification and the steps taken by the organisation to minimise this type of incident.

Council at the time also requested that NSW Health and DECC look at how exemptions for licensing are used and that a report be provided to Council on the matter. The Council at its September 2006 meeting considered and noted the advice provided by DECC.

Other

- Council considered an initial report of two high-dose readings recorded on dose monitors worn by two employees. The two employees received reading of 29,020 and 18,220 microsieverts respectively.

Council requested that further information be requested by the practice as a result of poor work practices and that DECC explore whether the licensee or the employer or both should be issued with a Penalty Infringement Notice. DECC issued the practice with a notice to take action to review its procedures and systems. A notice was issued by DECC and appropriate responses and actions were undertaken.

Categories of radiation accidents reported between 2004 and 2007

Table 11 provides a summary of accident reported to DECC in specific categories of accidents between 2004–05 and 2006–07.

TABLE 11			
Categories of accidents reported between 2004 and 2007			
Accident Category	2004–05	2005–06	2006–07
Nuclear Medicine	19	25	9
Therapy	5	3	7
Radiology	5	4	12
Other	2	2	0
Total	31	34	28

The Council acknowledged that the number of reported nuclear medicine accidents during this period is lower than that of the last period. In the last period one facility reported 12 nuclear medicine accidents which had occurred at its facility between June 2001 and April 2005. The Council acknowledges that the increase in the number of radiology accidents reported during this period is most probably because of DECC raising the awareness of the need to report accidents.

During the reporting period the Council again raised this issue that the same type of accidents involving human error were continuing to occur despite procedures being changed. DECC and Council agree that accidents in both the nuclear medicine and radiology fields are uncommon.

However they intend to maintain a close watch on these and will continue to refer serious incidents on to the Health Care Complaints Commission.

Number of radiation accidents reported between 2001 and 2007

Table 12 summarises the number of accidents reported to DECC during the period 2001-2002 to 2006–07.

TABLE 12 Radiation accidents reported between 2002 and 2007	
<i>Year</i>	<i>Number of accidents reported</i>
July 2002–June 2003	14
July 2003–June 2004	23
July 2004–June 2005	31
July 2005–June 2006	34
July 2006–June 2007	28

Appendix 1: Memorandum of Understanding between the EPA and the Radiation Advisory Council

Statement of common intent

This Memorandum of Understanding has been agreed between the Environment Protection Authority (EPA) and the Radiation Advisory Council (Council) to document the practical aspects of the way that each will work with the other to advance radiation safety in New South Wales. Both the Council and the EPA are committed to a cooperative and collaborative partnership with the aim of advancing the objectives of the Act. This Memorandum of Understanding shall be reviewed annually and remain in force until such time as both parties agree otherwise.

The roles and responsibilities for each body are set out in the *Radiation Control Act 1990* (the Act). Fundamentally, the Council provides expert advice to the EPA and the Minister for the Environment across all radiation safety matters, while the EPA has responsibility for administering the regulatory functions provided by the Act. This Memorandum of Understanding includes an agreement on how advice from the Council will be utilised by the EPA in the details of issuing licences, registrations and accreditations.

The Council also has a key role in helping the EPA develop radiation safety policy for New South Wales. The EPA has responsibility for formally adopting and giving effect to such policies. The EPA must also take into account New South Wales Government policy, any direction from the Minister for the Environment and other advice it receives in developing and implementing policy. In recognition of Council's special expertise, the EPA will engage openly, early and in detail with the Council in the development of radiation safety policy matters.

Agreed details of how the Council and EPA collaborate

1. Development of regulatory guidelines and policies

The EPA will provide the Council with drafts of any new or amended guidelines, policies or standards that are developed or reviewed by the EPA or other external bodies. The EPA will seek the formal advice of the Council at each stage in the process of the development of these guidelines, policies and standards. This consultation will include the results of any feedback obtained in community consultation processes. The Council will also be formally requested to endorse the final products of the development of guidelines, policies and standards.

2. Provision of advice from the Council to the Minister

Section 30 of the Act gives the functions of the Council in relation to provision of advice to the Minister.

- (1) The Council is to advise the Minister on:
 - (a) proposed amendments to this Act and the making, amendment or repeal of regulations under this Act, and
 - (b) the administration of this Act and the regulations, and
 - (c) measures to prevent or minimise the dangers arising from radiation, and
 - (d) the granting of exemptions authorised by the regulations for periods exceeding 60 days, and
 - (e) such other matters relating to radiation safety as the Minister considers appropriate.

- (2) Any such advice may be given either at the request of the Minister or without any such request.

The Council may also provide advice to the EPA from time to time, as it sees fit and on issues that it considers to be of relevance, at the request of the EPA or of its own accord.

3. Correspondence

When requested by the Council to prepare correspondence on their behalf, the EPA will present a draft of the correspondence for comment. After amendments to the draft have been prepared in light of the comments offered by the Council, the EPA will submit a final version for endorsement prior to signing by the Chair.

The timeframes for the preparation of drafts and presentation of final versions of correspondence for endorsement by the Council will be managed by the EPA to accommodate the workload of the Radiation Control Section at the time.

Finalised correspondence, which has been mailed out, and correspondence received, will be tabled by the EPA at the next Council meeting subject to the deadlines for submission of business papers for that meeting.

4. Storage of documents

Records of meetings, including agendas, minutes, and all documents associated with the meetings of the Council are kept by the EPA. These records will, as far as is possible, be kept in electronic format and will be made available to the members of the Council upon request to the EPA, in a timely manner.

5. Provision of secretariat support

The EPA will provide secretariat support to the Council and all its committees. This support will include the:

- preparation and distribution to Council members of the agendas for meetings of the Council and committees;
- the taking of minutes and their distribution to members; and
- the preparation of any correspondence requested by the Council.

6. Development of procedures

The EPA and the Council will further develop the system of generic advice for applications to the EPA for licences, registrations and accreditations and the EPA will continue to refer applications not covered by the generic advice to Council. The EPA will also seek the advice of the Council in regard to radiation accidents and incidents, and their investigation, and in regard to the assessment of research applications.

The EPA will seek active input from the Council on strategic and policy matters. These will include substantive input into any review or development of legislation, and emphasis on the development of standards, codes of practice and guidelines. There will be substantial activity during the development of the *National Directory for Radiation Protection*.

While recognising that the RAC performs an advisory function, and the EPA is the decision maker, the parties agree to work through disagreement as follows:

- That there will be an opportunity for discussion, including consideration of the decision making process of both the RAC and the EPA;

- The EPA will advise Council if it has formed a view that it intends to make a decision which is inconsistent with RAC advice, and will provide an opportunity for discussion about the differences;
- Council may request the EPA to provide an independent facilitator, and the EPA agrees to consider each such request in good faith;
- If the EPA decides to proceed in a manner inconsistent with RAC advice, it will provide the RAC with a written explanation of why it has decided to do so.

7. Determinations for licensing, registration and accreditation

The EPA is the determining Authority for applications for licences, registrations, accreditations and variations to licences and accreditations, made under Part 2 of the *Radiation Control Act 1990*. The EPA is empowered by section 9A of the Act to seek and take into consideration the advice of the Council on such matters.

Section 30 (2A and 2B) of the Act empowers the Council to provide advice to the EPA on Part 2 applications at any time and requires the Council to do so when so requested by the EPA. The advice provided by the Council may be generic or specific, as the circumstances require.

The Council has provided the EPA with generic advice on Part 2 applications and this advice, known as 'standing advice' is recorded at Schedule 2 of the Council's *Corporate Governance and Operating Procedures* manual. It is the duty of the EPA to maintain the standing advice in Schedule 2 up-to-date. Part 2 applications that are fully covered by the standing advice at Schedule 2 are known as 'routine applications'. Part 2 applications that are not covered, or are only partly covered, by the standing advice are known as 'non-routine applications'.

Before an officer with the delegated Authority to do so determines a Part 2 application, s/he must have regard to relevant requirements of Part 2 of the Act, the Radiation Control Regulation 2003, and the standing advice of the Council.

Unless the Director General has agreed in writing to the following procedure being varied, the officer:

- may approve any routine application without first seeking the specific advice of the Council on the application; but
- before approving any non-routine application must seek and take into consideration the advice of the Council on the application; and
- before refusing any application must seek and take into consideration the advice of the Council on the application.

Normally the Director General will only approve a variation in this procedure in an emergency, in which case the concurrence of the Council to the determination is to be sought retrospectively as soon as practicable.

LISA CORBYN
Director General
Department of Environment and Conservation

8 July 2004

SIMON A Y SMITH
Chairperson
Radiation Advisory Council

5 July 2004

Appendix 2: Membership of committees of the Council during 2006–07

Regulatory Review and Reform Committee		
Member	Membership category	Meetings attended
Dr Lucy Robinson	Chairperson (Chairperson)	5
Mr John Robinson	Diagnostic radiographer	5
Dr Cameron Hazlehurst	Community Representative	5
Mr Mark Moskvitch	Deputy to an officer of WorkCover Authority NSW	4
Mr Luke Platt	Minister's Representative	2
Dr Henry Forester	DECC (Hazardous Materials & Radiation)	5
Mr Alex Kalaiziovski	DECC (Hazardous Materials & Radiation)	5

National Directory Committee		
Member	Membership category	Meetings attended
Dr Cameron Hazlehurst	Community representative (Chairperson)	4
Dr Lucy Robinson	Legal practitioner	4
Mr John Robinson	Diagnostic radiographer	4
Dr Richard Smart	Medical physicist	4
Mr Paul Cardew	Deputy Medical Physicist	1
Ms Sarah Crompton	An officer of the Department of Health	1
Mr Mark Moskvitch	Deputy to an officer of WorkCover Authority NSW	3
Mr Jon D'Astoli	Occupational health and safety	4
Dr Philip Pasfield	Radiologist	4
Dr Geoff Schembri	Physician in nuclear medicine	3
Dr Mary Dwyer	Radiation oncologist	5
Mr Lee Collins	Expert in non-ionising radiation	4
Mr Colin Hockings	Expert in industrial uses of radiation	3
Mr Mark Carey	DECC (Hazardous Materials & Radiation)	3
Mr Peter Williams	DECC (Hazardous Materials & Radiation)	2

The Shielding Assessment and Verification Committee		
<i>Member</i>	<i>Membership category</i>	<i>Meetings attended</i>
Dr Richard Smart	Medical physicist (Chairperson)	6
Mr Jeremy Pigott	Health physicist	4
Mr Paul Cardew	Deputy medical physicist	6
Mr Lee Collins	Expert in non-ionising radiation	3
Mr Kevin Fitzsimmons	Industry representative (Radiation Services Australia)	2
Janet Raper	An officer of the Department of Health	2
Barry Field	DECC (Hazardous Materials & Radiation, Radiation Operations)	3
Daniela Freschi	DECC (Hazardous Materials & Radiation, Dangerous Goods and Radiation Policy)	6

Exemption Levels for Radionuclides Working Group		
<i>Member</i>	<i>Membership category</i>	<i>Meetings attended</i>
Mr Mike Carter	Expert in naturally occurring radioactivity (Chairperson)	6
Ms Sue Macalpine	DECC (Hazardous Materials & Radiation, Dangerous Goods and Radiation Policy)	6
Mr Steve Hartley	DECC (Waste Policy)	2
Leesa Crawford	DECC (Waste Policy)	2
Stede Condouris	Industry member	2

Abbreviations

ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
CRE	Consulting radiation expert
CT	Computed Tomography
DECC	Department of Environment and Climate Change NSW
EPA	Environment Protection Authority
HCCC	Health Care Complaints Commission
MBq	Megabecquerels
MOU	Memorandum of Understanding
RAC	Radiation Advisory Council
RHC	Radiation Health Committee