

The logo consists of two overlapping triangles. The front triangle is a dark green color and contains the letters 'RAC' in white, bold, sans-serif font. The back triangle is a lighter green color and is partially obscured by the front one.

RAC

RADIATION ADVISORY COUNCIL

ANNUAL REPORT 2007–08

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The Honourable Carmel Tebbutt
Minister for Climate Change and the 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 2007 to 30 June 2008. This report has been prepared in accordance with the provisions of the *Radiation Control Act 1990*.

Yours sincerely

A handwritten signature in black ink, reading "C. Lambertson", written in a cursive style.

CRAIG LAMBERTON

Chairperson
Radiation Advisory Council
November 2008

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Chairperson's review

The Radiation Advisory Council (the Council) is established under the *Radiation Control Act 1990* and is administered by the Environment Protection Authority (EPA). The EPA has certain regulatory powers which are performed on its behalf by the Department of Environment and Climate Change (DECC).

During the reporting year the Council met six times and provided policy and regulatory advice to DECC and the Minister on a wide range of radiation matters. The work and activities of the Council that were of particular significance included:

- the review of the work of the Regulatory Review and Reform Committee on its input to the development of a draft public discussion paper on the review of the Act
- the review of the National Directory for Radiation Protection (the Directory), Edition 2.1 and the accompanying Regulatory Impact Statement
- the provision of advice on four Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) draft safety guides and one code that will eventually form part of the Directory and will be required to be referenced by each jurisdiction in their radiation protection legislation
- the review and endorsement of the work of the Exemption Levels for Radionuclides Committee specifically the provision of input into the development of the proposed thresholds for regulation of radioactive material in NSW and proposed framework for adopting the Directory limits for the regulation of radioactive material
- the review of the work of the Shielding Assessment and Verification Committee particularly endorsement of the revised draft guidelines *Design and Assessment and Verification of Shielding*
- the provision of advice to the Minister on the risk and impact of waste water discharges from hospital nuclear medicine facilities in response to proposed changes to Sydney Water Trade Waste Agreements with public hospitals
- the provision of comments on a draft paper Estimate of Risk to Human Health and the Environment from Natural Radioactivity in Industry Emissions prepared by DECC
- discussion on the development of a regulatory regime for the safe use of solaria
- input into the developed of the National Code Security of Radioactive Sources
- nomination of a member of Council to participate on a Standards Australia Committee for the review of the Joint Australian AS/NZS 2635:2002 Standard *Solaria for Cosmetic Purposes*
- the review of the Memorandum of Understanding between the Council and the EPA.

During the year, the Council also provided advice encompassing a broad range of radiation matters including, licensing applications; radiation safety courses for the purposes of licensing; registration and accreditation applications; and the review of radiation accidents.

Next year the Council's primary work will be on the review of the Act and draft guidelines to be developed for the Directory.

The Council has had a very productive year and I would like to thank all members of the Council for their contribution and commitment. I would also like to express my thanks to DECC Hazardous Materials and Radiation Section staff for their continued support of the Council and its committees.

A handwritten signature in cursive script that reads "Lamberton".

CRAIG LAMBERTON
Chairperson
September 2008

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 are used interchangeably throughout this document.

Meetings of the Council

The Council at its December 2007 meeting endorsed the Council's meeting dates and Council committees' meeting dates for 2008.

During the reporting period ending 30 June 2008, 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 and endorsed minor administrative changes to the MOU at the December 2007 meeting.

TABLE 1			
Members of the Radiation Advisory Council and meeting attendance 2007–08			
Member	Appointed position	Meetings attended	Meetings eligible to attend
Mr Craig Lamberton	Chairperson	5	6
Mr Simon Smith	Deputy	0	1
Dr Philip Pasfield	Radiologist	3	6
Dr Andrew Scott	Deputy	0	3
Mr John Robinson	Diagnostic radiographer	4	6
Mr Glen Burt	Deputy	1	2
Mr Colin Hockings	Expert in industrial uses of radiation	5	6
Mr Jeremy Pigott	Health physicist	5	6
Mr Roger Alsop (appointed 2/10/2007)	Deputy	1	1
Dr Geoffrey Schembri (term expired 6/12/2007)	Physician in nuclear medicine	1	3
Dr Eva Wegner (appointed 5/3/2008)		1	2
Dr Hugh Dixon (appointed 5/3/2008)		Deputy	1
Assoc. Prof. Lee Collins, AM	Expert in non-ionising radiation	5	6
Mr Howard Ackland	Deputy	1	1
Mr Jon D'Astoli	Expert in occupational health and safety	6	6
Mr David Lloyd-Jones (term expired 5/10/2007)	Deputy	0	0
Ms Karen Wolfe (appointed 2/10/2007)	Deputy	0	0
Dr Ludmilla Robinson	Legal practitioner	5	6
Mr John Clark	Deputy	0	1
Dr Cameron Hazlehurst	Community representative	6	6
Ms Lea Maher	Deputy	0	0
Ms Kathy Meleady/ Dr Kerry Chant	An officer of the Department of Health/ Deputy	5	6
Dr Mary Dwyer	Radiation oncologist	5	6
Dr Roland Yeghiaian-Alvandi	Deputy	0	1

TABLE 1 (continued)			
Members of the Radiation Advisory Council and meeting attendance 2007–08			
Member	Appointed position	Meetings attended	Meetings eligible to attend
Dr Richard Smart	Medical physicist	4	6
Mr Paul Cardew	Deputy	2	2
Mr Mark Moskvitch (appointed 31 October 2007)	An officer of WorkCover Authority NSW	3	4
Mr Mark Moskvitch (resigned on appointment as member)	Deputy	1	2
Mr Michael Carter	Expert in naturally occurring radioactivity	5	6
Mr Brian Holland	Deputy	0	1
Mr Luke Platt	Minister's nominee	3	6

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.

Council's strategic direction

The Council's strategic direction priorities for 2006 to 2009 were endorsed at its July 2006 meeting. The Council's priorities reflect both the ongoing fundamental issues of radiation protection as well as the changing state of the circumstances within which these issues must continue to be addressed.

During the reporting period the Council continued to focus on:

- a review of the regulatory model for radiation control in NSW to ensure an efficient and effective regime for controlling risks to human health and the environment
- identification of emerging issues in radiation protection
- identification of procedures and rules to prevent or minimise dangers arising from radiation exposure in the environment.

Council's work

During the reporting period Council focused its attention on:

- the review of radiation control legislation
- the review of, and input to, the national codes and standards arising from the national uniformity process
- a proposed framework for adopting the National Directory for Radiation Protection (the Directory) limits for radioactive material

- finalising DECC revised draft guidelines *Design and Assessment and Verification of Shielding*
- consideration of trade waste acceptance standards for hospitals.

A considerable amount of the work of Council is undertaken by the Council's committees. Details on Council's committees are provided in the next section.

During the reporting period Council also provided advice to DECC in relation to routine matters:

- non-standard licensing applications
- radiation safety courses for the purposes of licensing
- non-standard registration applications
- non-standard accreditation applications
- review of radiation accidents.

In addition, during the reporting period the Council:

- provided comments on a draft paper *Estimate of Risk to Human Health and the Environment from Natural Radioactivity in Industry Emissions* prepared by DECC. The aim of the paper is to identify possible radioactive emissions from industry.
- considered participation on a Standards Australia Committee for the review of the Joint Australian AS/NZS 2635:2002 Standard *Solaria for Cosmetic Purposes*. The Council wrote to Standards Development Solutions advising that Mr Collins, who holds the position of expert in non-ionising radiation on the Council, is nominated on behalf of the Council to be a participant of the committee reviewing the solaria standard.
- was provided with a presentation by DECC on 'The Regulation of Radionuclides from Port Kembla Steelworks Sinter Plant' at the August 2007 meeting
- was provided with a paper *Scoping Report on Industrial Radiation Protection Training in Australia* prepared by Government Skills Australia for consideration. A presentation on the national training requirements is proposed to be provided to the Council at the October 2008 meeting.
- viewed correspondence to stakeholders alerting them to the adoption and implementation of the *National Code of Practice for Security of Radioactive Sources* in NSW
- provided input into and received progress reports on the development and construction of an environment science facility.

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 standing committees:

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

During the reporting period Council was provided with progress reports at each meeting on the work undertaken by each of its 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 three occasions and provided input to the draft discussion paper on the statutory review of the Act.

National Directory Committee

The Council established this committee to assist it in the development and implementation of 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 five occasions and considered and provided advice to the Council in relation to the following Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) draft documents:

- *National Directory for Radiation Protection* Edition Two and Regulatory Impact Statement consultation draft
- *National Directory Radiation Protection* Amendment No. 2 2008
- Regulatory Impact Statement Consultation Draft for the Code of Practice: *Radiation Protection in the Medical Applications of Ionizing Radiation*
- Safety Guide: *Radiation Protection in Nuclear Medicine*
- Safety Guide: *Radiation Protection in Radiotherapy*
- Safety Guide: *Radiation Protection in Diagnostic and Interventional Radiology*
- Safety Guide: *Radiation Protection in Diagnostic and Interventional Radiology* post consultation draft
- Safety Guide: *Management of Naturally Occurring Radioactive Material Consultation Draft*

During the reporting period the committee also:

- reviewed comments made by ARPANSA on the comments provided by DECC and Council on the Code of Practice: *Radiation Protection in the Medical Applications of Ionizing Radiation*
- the committee also provided DECC and Council with a report on the National Conference on Radiation Protection in Medicine held on 3 October 2007. The conference was part of the consultation process in the development of the medical codes and safety guides.
- was kept informed of the status of ARPANSA publications, working parties and the work of the Radiation Health Committee (RHC).

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 *Regulation*
- 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.

The Council during 2006–07 endorsed a draft guideline *Design and Assessment and Verification of Shielding* and a proposal for accreditation of CREs for premises which was developed by the committee in conjunction with DECC.

During the reporting period the committee reviewed and provided comment on the draft guideline *Design and Assessment and Verification of Shielding*, as revised by DECC. The changes made to the draft guideline by DECC included: amendments to CRE requirements specifically in relation to the issue of independent CREs; reformatting the Guideline to be congruent with other radiation guidelines; inclusion of additional statistical information in tables; and amendments to context to bring it into line with recent legislative changes.

The committee considered the comments and changes made to the draft guideline out of session and met once to discuss the changes and comments. At this meeting the committee recommended further changes to the draft guideline particularly in relation to CRE requirements.

The Council endorsed the recommendation of the committee at the June 2008 meeting to amend the draft guideline as proposed, and that once amended, the draft guideline be released by DECC for public comment.

Exemption Levels for Radionuclides Committee

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 are important as they distinguish between levels of potential exposure that represent a trivial risk from those that represent a level of risk that may require regulatory intervention.

The committee 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 Act.

During the reporting period the committee met on three occasions and:

- reviewed proposed management requirements under the *Protection of the Environment Operations Act 1997* (POEO Act) and *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes*
- considered and reviewed disposal options for materials specifically exempted under the Act
- reviewed and provided comment on the draft *National Directory Radiation Protection*, second edition (with respect to waste disposal and naturally occurring radioactive material (NORM) related materials)
- considered the use of action levels below the proposed threshold for regulatory control
- considered surface contamination in laboratories and reporting requirements under the Act
- reviewed and provided comment on the ARPANSA draft *Safety Guide for the Management of Naturally Occurring Radioactive Material* (NORM)
- reviewed and provided comments on the proposed development of a national safety guide on the methods for monitoring, assessing and recording occupational radiation doses received in mining and mineral processing
- developed a draft paper *Summary of the proposed revised exclusion, exemption and regulation values for the possession and use of radionuclides in NSW*
- developed the regulatory framework for implementing thresholds for waste management.

The Council at the August and December 2007 meetings was provided with a presentation by DECC on the proposed thresholds for regulation of radioactive material and an overview of the recommendations of the committee regarding the adoption of the Directory limits for the regulation of radioactive material.

Council endorsed the recommendations of the committee, specifically the framework for adopting the Directory limits for radioactive material at the 15 February 2008 meeting.

During the 2007-2008 reporting period the Council also established a temporary committee to consider a specific matter in relation to trade waste acceptance standards for hospitals. The work of this committee is provided below.

Committee to consider trade waste acceptance standards for hospitals

NSW Health initially asked the Council to comment on the actual risk and impact of waste water discharges from hospital nuclear medicine facilities in light of the proposed changes to Sydney Water Trade Waste Agreements with public hospitals.

Council suggested that NSW Health and Sydney Water discuss the matter further pending the assessment by ARPANSA of the discharges from three hospital sites in NSW.

NSW Health formally requested Council to re-consider the matter and review the assessment undertaken by ARPANSA.

The Council established a committee which met on 16 November 2007 to consider the matter. The committee reported its findings to Council. The Council endorsed the committee's recommendations and relayed these to the Minister advising that Council's initial review of the ARPANSA report *Potential exposures to Sydney Water employees and members of the public as a result of managing, discharge, and reusing effluent collected from catchments that include hospitals with nuclear medicine capabilities* found that the report may significantly overestimate the risk to Sydney Water staff and is worthy of substantive review.

Council recommended that NSW Health commission a thorough and independent review of the reports to determine the significance of the identified risks and the practicable management options that could be applied where necessary. The Minister wrote to the Minister for Health informing her of the issues and of Council's recommendations.

Membership of all Council committees is shown at Appendix 2.

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.

Under the terms of the National Competition Policy (NCP) Agreements, documents referenced in Schedule 11 of the Directory are to be specifically adopted by each jurisdiction within their regulatory frameworks. NSW amended the Act in 2001 to provide an easy mechanism for the adoption of such documents.

During the year, the Council provided DECC with advice on four safety guides and one draft *Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation* and the corresponding Regulatory Impact Statement Consultation Draft. These ARPANSA draft documents were issued for public comment and are intended for inclusion in the Directory.

In November 2007 the RHC agreed that the second edition of the Directory would not be progressed as a consolidated document, but would be progressed as a series of individual issues with separate regulatory impact statements.

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

- *National Directory for Radiation Protection* Edition Two and Regulatory Impact Statement Consultation Draft
- *National Directory for Radiation Protection* Draft Amendment No. 2 2008, Exclusions and Exemptions

- *Draft Practice Specific Security Guides for the Code of Practice for the Security of Radioactive Sources*

During the reporting year Council was also provided with:

- reports on the outcomes of the Radiation Health Committee Meetings held in July 2007, November 2007 and March 2008
- DECC comments to ARPANSA on the Draft Safety Guide for the Code of Practice for the Safe Transport of Radioactive Material (2008)
- an update on the implementation of Code of Practice for the Security of Radioactive Sources.

Review of radiation control legislation

Radiation Control Amendment (Miscellaneous) Regulation 2007

Council during 2006–07 reporting period provided advice to DECC on proposed amendments to the Radiation Control Regulation 2003 (the Regulation).

During the reporting period Council noted that the Radiation Control Amendment (Miscellaneous) Regulation 2007 was gazetted and commenced on 7 September 2007. The following changes were made to the Regulation:

- exempting registered dentists and dental auxiliaries from licensing requirements under the Act when performing general dental radiography
- enabling the Minister to grant exemptions for licensed radiation professionals and their equipment from licensing and registration requirements in NSW in an emergency situation
- introducing the option of a three-year licence in addition to the current one-year licence
- extending the current exemptions from licensing requirements under section 6 of the Act and registration requirements under sections 7 and 8 of the Act
- other miscellaneous amendments.

DECC initiated the changes to the Regulation to meet Priority P3 of the *NSW State Plan* – to cut red tape – and to reduce unnecessary regulatory requirements and duplication. Changes were also made to facilitate the rapid exchange of radiation professionals and equipment between jurisdictions, in line with the Directory and Uniformity Agreements arising from the National Competition Policy Review of Radiation Legislation.

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

The EPA is the authority for dealing with licence applications and variations to licences 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 the EPA on Part 2 applications.

Section 6 of the Act regulates the use and sale of radioactive substances and radiation apparatus. 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 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:

- endorsed changes to remote operator licence conditions, and reviewed the corresponding information sheet. The changes to the conditions of licence and the information sheet were developed in collaboration with DECC, Council, NSW Health and the Australian Institute of Radiography. The amendments to the remote operator conditions of licence are intended to increase the accountability of referrers and provide guidance as to the appropriate use of remote operators when radiographers are not available.
- endorsed the classification of the Planmeca Promax 3D Orthopantomogram Dental Apparatus as a orthopantomogram (OPG) for the purposes of licensing
- endorsed the granting of 22 non-routine licence applications
- recommended that four non-routine licence conditions not be approved until either the applicant completes an appropriate course or upon DECC assessing whether the applicant's current qualifications are equivalent to an approved course
- endorsed the following non-routine licence conditions for issue by DECC without further referral to Council subject to the applicant meeting all the required criteria set by Council:
 - IA6 Use radiation apparatus for industrial radiography
 - IA8 Use radiation apparatus for scientific or research purposes
 - IA10 Installation and/or servicing of radiation apparatus
 - S10 Installation and/or servicing of devices containing a radioactive substance
 - S6 Use radioactive substances for industrial radiography
 - S8 Use radioactive substances for scientific or research purposes – only for applications for the substances: Carbon 14; Hydrogen 3; Iodine 125; Phosphorus 32; Phosphorus 33; Sulfur 35; and Chromium 51 with an activity of 500 MBq or less
- reviewed two radiation safety courses for the purposes of licensing and recommended that both providers submit additional material prior to Council re-considering the courses
- endorsed the accreditation of courses by the Council on Chiropractic Education as suitable as a pre-requisite to obtain a chiropractic licence condition (IA21) to use for chiropractic radiography
- provided initial comment on eight courses submitted by Australian Nuclear Safety and Technology Organisation (ANSTO) as pre-requisites for gaining several radiation licence categories. The Council recommended that the courses be re-considered by a committee of the Council in July 2008
- acknowledged the need to discuss the training and licensing that may be required for medical radiation assistants, if NSW Health decides to introduce these new positions
- considered the statistics on routine licences issued during the year
- considered an update on DECC's radiation enforcement campaign held during 2006–2007 (with respect to licensing).

For the reporting period ending 30 June 2008 Council was advised that, DECC issued 1681 licences, including 100 licences for sale/possession and 1581 licences to use radiation apparatus or radioactive substances. The total number of licences (1681) 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 2007–08 DECC also renewed 10,053 licences – 9366 licences to use and 687 licences to sell/possess radioactive substances or radiation apparatus.

Council acknowledged that the number of total licences issued during the reporting period is lower than the previous period due to the exemption of registered dentists and dental auxiliaries from licensing requirements under the recent amendments to the Regulation when performing general dental radiography, that is, not including the use of orthopantomograms (OPGs). Dentists, dental hygienists and dental therapist are still required to hold a licence if using OPGs for general dental radiography.

At the end of the reporting period there were 12,749 active licences.

TABLE 2		
Number of licence conditions issued in 2007–08 listed by occupational category		
Occupational category	Radioactive substances	Ionising radiation apparatus
Dental	0	249
Medical—specialist	14	91
Medical—other and related	180	787
Servicing/installation	35	49
Educational	9	2
Safety	3	3
Management	3	3
Scientific/research	109	44
Engineering	22	22
Technical	225	61
Other	0	11
Company (licence to sell)	47	84
Rural	2	0
Miscellaneous	0	120
Veterinary	34	66
Total	683	1592

Table 3 summarises the number of new licences issued by DECC during the period 2000–01 to 2007–08.

TABLE 3			
Number of new application licences issued from 2000–01 to 2007–08			
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
July 2007–June 2008	683	1592	2275

* 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 (SSD) 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:

- enable the regulatory authority to place best practice requirements on the operation and maintenance of radiation apparatus, SSD and radioactive substances, including the design and construction of premises where radiation apparatus, SSD and radioactive substances are kept or used
- enable up-to-date records to be kept on all sealed source devices, certain radiation apparatus and premises where radioactive substances are kept or used
- allow the regulatory authority to restrict the use of apparatus, SSD and radioactive substances to pre-agreed practices or activities which ensure that the protection of individuals and the environment is optimised.

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 the classification of the Planmeca Promax 3D Orthopentomogram Dental Apparatus. The Council considered that for the purposes of registration the apparatus could be classified as an orthopentomogram (OPG)
- considered the emerging security implications in relation to the management of radioactive sources
- was provided with the outcomes of DECC's radiation enforcement campaign 2006–07 (with respect to registration)
- was provided with statistics for routine registration issued during the year ending 30 June 2008.

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 2008, DECC issued 559 registrations and renewed 923 registrations for diagnostic imaging apparatus as shown in Table 5.

TABLE 5		
Number of diagnostic imaging apparatus registered in 2007–08		
Equipment type	Registrations	Renewed registrations
Fixed dental radiography	197	380
Fixed radiography	73	92
Fixed fluoroscopy	8	35
Fixed radiography/fluoroscopy	14	67
Fixed mammography	31	58
Computed tomography	53	100
Dental computed tomography	4	3
Bone mineral densitometry	18	11
Mobile dental radiography	11	10
Mobile radiography	51	62
Mobile fluoroscopy	26	59
Mobile radiography/fluoroscopy	3	10
Mobile mammography	2	12
Panoramic Radiography	68	24
Total	559	923

Table 6 gives the number of new diagnostic imaging apparatus registered by DECC between 2000–01 and 2007–08.

TABLE 6
Number of new diagnostic imaging apparatus registered between
2000–01 and 2007–08

Equipment type	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08
Fixed dental radiography	2592	168	453	381	465	422	374	197
Fixed radiography	832	134	118	70	80	119	92	73
Fixed fluoroscopy	69	18	17	10	7	16	10	8
Fixed radiography/fluoroscopy	246	31	43	41	26	19	22	14
Fixed mammography	161	31	52	28	34	26	16	31
Computed tomography	174	22	59	72	55	65	56	53
Dental CT	0	0	0	0	0	3	2	4
Bone mineral densitometry	66	9	15	16	11	27	16	18
Mobile dental radiography	72	6	9	10	6	10	6	11
Mobile radiography	686	70	92	57	64	101	61	51
Mobile fluoroscopy	118	18	24	38	33	38	21	26
Mobile radiography/fluoroscopy	60	10	0	10	14	7	7	3
Mobile mammography	17	8	8	5	2	4	0	2
Panoramic radiography	265	43	35	24	24	39	51	68
Total	5358	568	925	762	821	896	734	559

The total number of diagnostic imaging apparatus registered by DECC as at 30 June 2008 was 6799. 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 Act. As at 30 June 2008, 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 by DECC under the Regulation. Radiotherapy apparatus is 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 2007–08.

TABLE 7								
Number of therapy apparatus registered between 2003–04 and 2007–08								
Equipment type	2003–04	2004–05	2005–06		2006–07		2007–08	
			New	Renewed	New	Renewed	New	Renewed
Kilovoltage therapy X-ray (superficial/orthovoltage)	17	0	3	25	0	0	2	16
Linear accelerator	38	4	3	9	12	4	2	23
Simulator	14	0	0	14	2	0	1	5
Total	69	4	6	48	14	4	5	44

At the end of the reporting period there was a total of 67 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 is every 2 years.

From 1 July 2004, fixed radiation gauges 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 516 sealed source devices as shown in Table 8.

TABLE 8						
Number of sealed source devices registered between 2004–05 and 2007–08						
Equipment type	2004–05	2005–06	2006–07		2007–08	
			New	Renewed	New	Renewed
Borehole logging	11	8	5	11	0	7
Soil moisture density and moisture determination	242	30	18	208	39	26
Density gauge	38	22	5	5	7	19
Neutron probe	52	1	7	36	2	1
Industrial radiography	28	14	6	20	3	6
XRF analyser	20	3	2	17	2	2
Portable gauge	9	1	0	8	0	1
Beta backscatter thickness testing	1	0	1	0	0	1
Self-shielded irradiator	12	2	4	12	2	2
Therapy device	16	3	1	8	2	3
Analyser	2	0	0	2	0	0
Nuclear medicine gamma camera	13	0	0	10	2	0
Fixed radiation gauges	79	63	58	249	70	319
Total	523	147	107	586	129	387

At the end of the reporting period there was a total of 1444 registered sealed source devices.

Registration of premises where radioactive substances are kept or used

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

Tables 9 and 10 summarise the number and category of premises registered by DECC between 2004–05 to 2007–08, respectively.

TABLE 9						
Category and number of premises registered where radioactive substances are kept or used during 2004–05 to 2005–06						
Premises category	2004–05			2005–06		
	High	Med	Low	High	Med	Low
Medicine (Government Hospital)	3	32	29	0	0	0
Medicine (Private Hospital)	1	21	25	0	2	2
Research (Government)	0	1	10	0	2	0
Research (University)	5	18	59	0	5	17
Research (Private)	0	1	10	0	1	3
Radioanalytical	0	1	2	0	0	0
Sterilisation	1	0	0	0	0	0
Store only for radioactive sources	0	3	23	0	2	7
Radiopharmacy	0	1	0	0	0	0
Industrial	1	0	1	0	1	0
Medicine (Private Practice)	0	0	2	0	0	0
Teaching (University)	0	0	0	0	0	0
Other	0	0	1	2	0	0
Total	11	78	162	2	13	29

TABLE 10												
Category and number of premises registered where radioactive substances are kept or used during 2006–07 to 2007–08												
Premises category	2006–07						2007–08					
	New			Renewals			New			Renewals		
	High	Med	Low	High	Med	Low	High	Med	Low	High	Med	Low
Medicine (Government Hospital)	0	5	6	3	31	25	0	3	1	0	0	0
Medicine (Private Hospital)	0	1	1	1	20	21	0	0	1	0	2	2
Research (Government)	0	0	2	0	0	8	0	0	0	0	2	0
Research (University)	0	0	3	4	16	47	0	0	0	0	4	6
Research (Private)	0	0	3	0	1	7	0	0	8	0	1	1
Radioanalytical	0	0	1	0	1	2	0	0	0	0	0	0
Sterilisation	0	0	0	1	0	0	0	0	0	0	0	0
Store only for radioactive sources	0	0	1	0	3	21	0	0	2	0	2	3
Radiopharmacy	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	1	0	1	2	0	1	0
Medicine (Private Practice)	0	0	2	0	0	1	0	0	1	0	0	0
Teaching (University)	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	1	1	0	0	1	0	0	0	2	0	0
Total	0	7	20	9	72	134	0	4	15	2	12	12

At the end of the reporting period, there was a total of 298 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 Regulation 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.

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 accreditation applications.

During the year the Council provided advice on one non-routine application for accreditation of a CRE in diagnostic imaging.

During the reporting year ending 30 June 2008, DECC accredited 4 CREs and renewed 27 CRE accreditations. The number of accreditations is the number of actual individual applications resulting in an accreditation being issued.

At the end of the reporting period there was a total of 98 accredited CREs.

Table 11 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. A CRE may have more than one condition therefore the total number of accreditation conditions issued is greater than the number of accredited CREs.

TABLE 11				
Number of accreditation conditions issued during 2007–08 and the total number of accreditation conditions as at 30 June 2008				
Category	Equipment	2007–08		Total as at 30 June 08
		Issued	Renewed	
Diagnostic imaging	Mammography	2	5	22
	Dental (intra-oral, OPG and cephalometry)	0	10	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	18	65
	Bone mineral densitometry (including veterinary and chiropractic)			
Industrial	Fixed radiation gauges	0	2	13
Total		4	37	148

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

Radiation accidents

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 Regulation. Clause 26 of the Regulation specifies the types of incidents that are classified as radiation accidents for the purposes of the Act

The Council acknowledges that accidents are normally caused by either deficiency in the relevant management systems, or failures on the part of individuals to implement those systems correctly. The Council normally recommends that new procedures be developed and implemented in cases where investigations reveal that accidents were caused by a deficiency in the management system. The Council usually recommends counselling or further training where an individual is at fault where 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 HCCC.

During the reporting period the Council noted that the results of Root cause analysis (RCAs) are not always provided by facilities. Council recommended that DECC write to NSW Health advising of this matter and seek its assistance in ensuring that RCAs are provided. The ability of Council to review RCAs is necessary in order to gain a clear understanding of the underlying causes of these accidents.

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.

During the reporting period ending 30 June 2008, DECC was informed of 26 instances where radiation accidents may have occurred. These involved 25 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 wrongly received 2500 CPM Technegas at 0.8 mSv/2000 CPM for a lung scan due to patient misidentification. The patient received a calculated dose of 1.0 mSv.
- A patient received 1.1 GBq Tc99m MIBI due to the study not being performed correctly. The incident occurred due to the failure to administer stressing agent prior to administration of 1.1 GBq Tc99m MIBI. Error occurred as a result of not checking pump activation during infusion. The study was rebooked. The patient received a calculated effective dose of 9.9 mSv.
- A patient wrongly received 107 MBq of 201TI-chloride for a cardiac scan instead of receiving a parathyroid scan. The patient received an effective dose of 15 mSv.
- A patient incorrectly received 736 MBq 99m Tc-HDP instead of 201TI Chloride for a myocardial perfusion scan due to the wrong lead pot being selected and not checked. The patient received an effective dose of 4.2 mSv.
- A patient wrongly received 193.5 MBq Gallium due to patient misidentification. The patient received an effective dose of 19.4 mSv.
- A patient received 455 MBq 99m Tc-MYOVIEW for a heart scan instead of 99m Tc-Sestamibi, for a whole body scan. The patient received an effective dose of 1.77 mSv.

Council was satisfied with the measures set in place to prevent recurrence of similar accidents however agreed that DECC should write to the practice and advise them of Council's concerns that trying to adjust the radiation dose when undertaking the correct scan could have resulted in a non-diagnostic scan.

- A patient was wrongly administered 903 MBq 99m Tc MDP for a bone scan of the foot and received an effective dose of 5.1 mSv.

- A patient incorrectly received 40 MBq of Tc-99m Sulfur Colloid to the small intestine instead of the stomach due to the wrong tube being used. The patient received an effective dose of 3.8 mSv.
- A patient received 1 GBq Tc-99m Sestamibi for a bone scan instead of 1 GBq Tc-99m HDP due to the wrong radiopharmaceutical being selected. The patient received an effective dose of between 7 and 10 mSv.
- A patient received 990 MBq Na Tc-99m O_4 for a bone scan instead of 1 GBq Tc-99m HDP due to the wrong radiopharmaceutical being selected. The patient received an effective dose of approximately 10 mSv.

Therapy

The Council reviewed the following accidents and recommended that the facility provide Council with the outcomes of the RCA when it becomes available.

- A patient was treated with one fraction from a total of 25 prescribed fractions of 18 MV radiation to treat pelvis and para-aortics. A geographic miss of 10cm was noticed resulting in 10 cm inferior to the field treated to 1.8 Gy and 10 cm of the superior portion of the field untreated. The untreated volume is to be compensated for during the rest of the treatment regime. The patient received 1.8 Gy to an area 10 cm x 16 cm x 14.5 cm inferior to the treatment field as a result of incorrect settings.

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. Council did however request that DECC advise Council of any pertinent outcomes of RCA where RCAs had not been provided.

- A patient received a repeat CT scan because a tap that would have allowed the contrast media to be injected had not been operated correctly. The patient received an effective dose of 12 mSv. Council was satisfied with the measure set in place to prevent the recurrence of similar accidents.
- Patient wrongly received a CT scan due to patient misidentification. The patient received an effective dose of 21 mSv.
- Patient wrongly received a cerebral CT due to patient misidentification as a result of the wrong patient's addressograph label being attached to the request form. The patient received an effective dose of 1.6 mSv.
- A patient incorrectly received an exposure of 64 mAs instead of 6.4 mAs for a chest X-ray as a result of miscommunication between staff of the exposure factors. The patient received an estimated effective dose of 0.5 mSv (compared to 0.05 mSv with correct mAs setting).
- A patient received a repeat CT scan due to an incorrect CT scan protocol being selected in the initial scan. The additional effective dose to the patient was estimated at 1.4 mSv.
- A patient received a repeat brain CT study due to original images being deleted by error. The patient received a calculated effective dose of 4.2 mSv. The process for archiving has since been automated therefore eliminating this type of error.
- A patient was incorrectly given an X-ray of the chest instead of the prescribed right ankle due to the incorrect procedure being given. The report indicated that the patient received a typical effective dose for an AP/CXR of 0.1 mSv.

- Two patients received a chest X-ray (mobile e-ray unit) each on separate occasions due to patient misidentification. The patients received an estimated effective dose of 0.05-01 each.

The Council reviewed the following accident and recommended that the facility provide further information regarding the accident in order to ascertain whether these facilities need further controls to correct deficiencies in standing operating procedures.

- Patient wrongly received CT CTPA angiogram instead of a renal angiogram examination. The patient received an estimated dose of 1378.79 DLP (mGy-cm).

At the time of writing this report no additional information was received.

The Council reviewed the following accidents and recommended that these facilities provide Council with the outcomes of the RCA when they become available.

- A patient incorrectly received an abdominal CT scan due to patient misidentification and received an effective dose of 21 mSv as a result of the error.
- A patient received the wrong CT scan due to a booking error. The calculated effective dose to the patient was 18.7 mSv.
- A patient was given an abdominal/pelvis CT scan when no scan was required. The patient received a calculated effective dose of 13 mSv.
- A patient was given a brain CT scan when one was not required. The patient received an effective dose of 3.6 mSv.

At the time of writing this report, DECC had not received the RCAs for the above accidents.

Other

- A moisture density gauge was stolen from a building site. Council were advised that NSW Police were still investigating the matter. Council suggested that in addition to the media release it might be beneficial for the media to be specifically targeted e.g. picture in paper, local radio or local newspapers.

Follow up actions from accidents reported in the last period:

Nuclear medicine

- 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 mSv. The Council requested that it be provided with the outcomes of the RCA investigation.

Council noted the RCA provided at its October 2007 meeting.

Therapy

- 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 requested 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 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.

Radiology

- A patient incorrectly received a CT scan due to the incorrect information on the patient's referral form. The estimated effective dose to the patient was 18 mSv. The Council requested that DECC be advised of any pertinent outcomes arising from the RCA being carried out.

Council noted the RCA provided at the October 2007 meeting.

The Council requested further information be provided to DECC of any pertinent outcomes arising from the RCA undertaken for the following accidents.

- 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 mSv.
- 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 mSv.
- A patient incorrectly received a CT scan due to patient misidentification. The estimated effective dose to the patient was 3.3 mSv.

At the time of writing this report, DECC had not received the RCAs for the above accidents.

Categories of radiation accidents reported between 2004 and 2008

Table 12 provides a summary of accident reported to DECC in specific categories of accidents between 2004–05 and 2007–08.

TABLE 12				
Categories of accidents reported between 2004–05 and 2007–08				
Accident category	2004–05	2005–06	2006–07	2007–08
Nuclear medicine	19	25	9	10
Therapy	5	3	7	1
Radiology	5	4	12	13
Other	2	2	0	1
Total	31	34	28	25

Number of radiation accidents reported between 2001 and 2008

Table 13 summarises the number of accidents reported to DECC during the period 2001–2002 to 2007–08.

TABLE 13	
Radiation accidents reported between 2002–03 and 2007–08	
Year	Number of accidents reported
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
July 2008–June 2008	25

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.

The EPA is part of the Department of Environment and Climate Change (DECC) and remains a statutory body with specific powers under environment protection legislation. Staff of DECC exercise regulatory activities for and on behalf of the EPA. Staff of DECC also provide administrative support to the Radiation Advisory Council on behalf of the EPA.

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 Climate Change and 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 NSW Government policy, any direction from the Minister for Climate Change and 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,
 - (b) administration of this Act and the regulations,
 - (c) measures to prevent or minimise the dangers arising from radiation,
 - (d) the granting of exemptions authorised by the regulations for periods exceeding 60 days,
 - (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 its 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 Hazardous Materials and Radiation 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
- 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 Council in regard to radiation accidents and incidents and their investigation, and in regard to the assessment of radiation safety courses.

The EPA will seek active input from Council on strategic and policy matters. These will include substantive input on 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 keep 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 of DECC 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 Climate Change

CRAIG LAMBERTON

Chairperson
Radiation Advisory Council

Appendix 2: Membership of committees of the Council during 2007–08

Regulatory Review and Reform Committee	
Member	Membership category
Dr Lucy Robinson	Legal practitioner (Chairperson)
Mr John Robinson	Diagnostic radiographer
Dr Cameron Hazlehurst	Community Representative
Mr Mark Moskvitch	An officer of WorkCover Authority NSW
Mr Luke Platt	Minister's representative
Dr Henry Forester	DECC (Hazardous Materials & Radiation)

National Directory Committee	
Member	Membership category
Dr Cameron Hazlehurst	Community representative (Chairperson)
Dr Lucy Robinson	Legal practitioner
Mr John Robinson	Diagnostic radiographer
Dr Richard Smart	Medical physicist
Ms Kathy Meleady	An officer of the Department of Health
Mr Mark Moskvitch	An officer of WorkCover Authority NSW
Mr Jon D'Astoli	Occupational health and safety
Dr Philip Pasfield	Radiologist
Dr Geoff Schembri (term expired 6/12/2007) Dr Eva Wegner (appointed 5/3/2008)	Physician in nuclear medicine
Dr Mary Dwyer	Radiation oncologist
Mr Lee Collins	Expert in non-ionising radiation
Mr Colin Hockings	Expert in industrial uses of radiation
Ms Sue Macalpine	DECC (Hazardous Materials & Radiation)
Mr Peter Williams	DECC (Hazardous Materials & Radiation)

The Shielding Assessment and Verification Committee	
Member	Membership category
Dr Richard Smart	Medical physicist (Chairperson)
Mr Jeremy Pigott	Health physicist
Mr Paul Cardew	Deputy medical physicist
Mr Lee Collins	Expert in non-ionising radiation
Mr Howard Ackland	Deputy expert in non-ionising radiation
Mr Kevin Fitzsimmons	Industry representative (Radiation Services Australia)
Janet Raper	An officer of the Department of Health
Daniela Freschi	DECC (Hazardous Materials & Radiation)

Exemption Levels for Radionuclides Committee	
Member	Membership category
Mr Mike Carter	Expert in naturally occurring radioactivity (Chairperson)
Ms Sue Macalpine	DECC (Hazardous Materials & Radiation)
Ms Helen Prifti	DECC (Waste Policy)
Mr Stede Condouris	Industry member

Committee to consider trade waste acceptance standards for hospitals	
Member	Membership category
Dr Richard Smart	Medical physicist (Chairperson)
Mr Paul Cardew	Deputy medical physicist
Mr Mike Carter	Expert in naturally occurring radioactivity
Dr Geoff Schembri (term expired 6/12/2007)	Physician in nuclear medicine
Dr Cameron Hazlehurst	Community representative
Mr Howard Ackland	Deputy expert in non-ionising radiation
Mr Roger Alsop	Deputy health physicist
Mr Jeremy Pigott	Health physicist
Sue Macalpine	DECC (Hazardous Materials & Radiation)

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
GBq	Gigabecquerel
Gy	Gray
HCCC	Health Care Complaints Commission
MBq	Megabecquerel
MOU	Memorandum of Understanding
mSv	milliSievert
NDRP	National Directory for Radiation Protection
NORM	Naturally occurring radioactive material
RAC	Radiation Advisory Council
RCA	Root cause analysis
RHC	Radiation Health Committee