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 2000 to 30 June 2001. This report has been prepared in accordance with the provisions of the *Radiation Control Act 1990*.

Yours sincerely

D R LEECE
Chairperson
Radiation Advisory Council
CHAIRPERSON’S REVIEW

2000–01 saw the first full year of operation of the Radiation Advisory Council since the changes to membership and governance arrangements in 1999–2000. The new membership and governance arrangements have proved to be very satisfactory and both the Minister for the Environment and the Environment Protection Authority (EPA) expressed satisfaction with the quality and timeliness of the advice that they have received from Council.

Council is constituted primarily as an expert body. It has nine technical specialists covering health and industrial uses of radiation. It also has a barrister, a community representative and a senior official of each of the EPA and the Department of Health. The need has emerged for two additional members – an expert on naturally occurring radioactive materials, such as found in mineral sands and karst systems, and a senior official of the WorkCover Authority. These needs will be considered when the Act is next amended.

Council met nine times during the year. It considered and provided advice on the National Review of Radiation Protection Legislation conducted under the National Competition Policy and the concurrent review of the New South Wales Radiation Control Act 1990 and the Radiation Control Regulation 1993. One outcome will be the need to amend the New South Wales legislation by 30 June 2002 to ensure that it satisfies the new national uniformity requirements. Another outcome, the agreement to use a national directory of radiation protection provisions to ensure national uniformity, will see primary responsibility for development of radiation policy, guidelines and regulations shifting from individual states and their radiation advisory councils to a new national body.

Council also prepared advice for the Minister for the Environment on the risk of health effects arising from low-level exposure to ionising and non-ionising radiation, with particular attention to issues of current community concern such as mobile phones, lasers and power sources. Several members of Council also advised Commonwealth authorities on guidelines and contingency plans for visits to Australian ports by nuclear powered warships.

Council, through its Technical Committee, continued to provide regular advice to the Environment Protection Authority on licensing, registration, accreditation and related operational matters, including appointment of radiation safety officers and committees, the investigation of radiation accidents and incidents, and the exposure of humans to ionising radiation in medical research. Council also reformed its Courses and Competencies Committee to advise the EPA on competencies appropriate for various classes of licence and accreditation of consulting radiation experts; and on the accreditation of related courses.

During 2001-02, Council will advise on remaking the Radiation Control Act and Regulation. It will also review Radiation Guideline No 6, which governs registration of diagnostic imaging apparatus, and on the commencement of the registration of premises.

I wish to thank the members of Council for their contributions to the work of Council and their support during the year. I particularly appreciate their willingness to serve the cause of radiation protection in New South Wales in this very important way. I am also grateful for the unfailing support of Council’s staff, particularly Ms Daniela Freschi-Nair, without which Council could not function.

D R LEECE
Chairperson
30 September 2001
RESPONSIBILITIES OF THE COUNCIL

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

The object of this Act is ‘to secure the protection of persons and the environment from exposure to ionising radiation, and harmful 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 therapeutic 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 is constituted under section 29 of the Act and is to consist of 14 members appointed by the Minister for the Environment. The membership of the Council is to consist of:

(a) the Director-General or a member of staff of the Environment Protection Authority, who is to be the Chairperson of the Council
(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 radiotherapist
(m) a medical physicist
(n) 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 the Act and the making, amendment or repeal of regulations under the Act;
   (b) the administration of the Act and the regulations;
   (c) measures to prevent or minimise the dangers arising from radiation;
(d) the granting, renewal, suspension and cancellation of any licence, registration or accreditation under the Act; 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;

(3) The Council has such other functions as are conferred or imposed on it by or under this or any other Act.

Officers of the Radiation Control Section of the New South Wales Environment Protection Authority (EPA) support the work of the Council.

MEETINGS OF THE COUNCIL

During the reporting period ending 30 June 2001 the Council met nine times.

The attendance of members at meetings during this period is shown in Table 1.

The Council’s governance arrangements and procedures are described in Appendix 1.

COMMITTEES OF THE COUNCIL

Section 31 of the Act provides for the Council to establish committees to help it exercise its functions. The committees of the Council during 2000–01 were:

- Technical Committee (formerly the Medical Radiation Committee and Health Physics Committee which met as the Conjoint Committee)

- Course and Competencies Committee (formerly the Course Assessment Committee).

The Technical Committee met on nine occasions during the 12-month period. This committee does much of the Council’s technical work. It makes recommendations to the Council on:

- matters such as applications for a licence and accreditation, including competency requirements and conditions to attach to licences for the use of radiation apparatus and radioactive substances

- the use of ionising radiation on humans for medical research studies

- safety protocols for the use of ionising radiation.

Council endorsed the establishment of a Course Assessment Committee on 20 February 1998. This committee did not meet in the previous period. Subsequently, Council at its June 2000 meeting, initiated a review of the committee. Council at its November 2000 meeting endorsed the re-establishment of the committee with a new title that better reflects the purpose of the committee, namely, the Course and Competency Committee. Council also expanded the committee’s terms of reference and endorsed its membership and standing operating procedures.

The committee’s role is to provide advice to the Radiation Advisory Council, pursuant to sections 6(5) and 9(3) of the *Radiation Control Act 1990*, pertaining to proposed licensing and accreditation qualifications. The Committee’s role also encompasses making recommendations to Council on emerging issues, technical developments and regulatory matters or policy development relating to suitability or necessity for approved courses. The committee had its first meeting in February 2001 and has met three times in this period.

Membership, terms of reference and operating procedures for the two committees of the Council are described in the Council’s governance arrangements in Appendix 1.
The attendance of members at meetings of Council’s two committees during this period are shown in Appendix 2.

### TABLE 1

<table>
<thead>
<tr>
<th>Member</th>
<th>Appointed position</th>
<th>Meetings attended</th>
<th>Meetings eligible to attend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr D Leece</td>
<td>Chairperson (EPA member)</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Ms D Campbell</td>
<td>Deputy to the EPA member</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Dr Phillip Pasfield</td>
<td>Radiologist</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Mr J Robinson</td>
<td>Diagnostic radiographer</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Mr C Hockings</td>
<td>Expert in industrial uses of radiation</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Mr M Carter</td>
<td>Health physicist</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Dr G Larcos</td>
<td>Physician in nuclear medicine</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Mr L Collins</td>
<td>Expert in non-ionising radiation</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Mr P Dunphy</td>
<td>Expert in occupational health and safety</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Dr L Robinson</td>
<td>Barrister</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Dr K Crawford</td>
<td>Community representative</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Member yet to be appointed.</td>
<td>Department of Health</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dr M Izard</td>
<td>Radiotherapist</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Dr D McLean</td>
<td>Medical physicist</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Ms J Collins (retired 15/11/2000)</td>
<td>New member yet to be appointed.</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

All members who were unable to attend meetings were granted leave from those meetings by Council. In many instances, absent members tendered written advice on agenda items which was considered by Council and its committees, as relevant, during deliberation on those items.
NATIONAL COMPETITION POLICY REVIEW

In December 1998, the Council of Australian Governments (COAG) Senior Officials Group agreed that the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) would conduct a National Competition Policy (NCP) review of all radiation protection legislation.

This resulted in a National Competition Principles Agreement, which committed all jurisdictions (except Queensland, as it had recently completed a similar review) to a NCP review of Radiation Protection Legislation.

The review was to comprehensively examine the case for reform of legislation addressing radiation protection matters that have been enacted in each participating jurisdiction. The focus would be on those parts of the legislation, which restrict competition or which impose costs or confer benefits on business and will involve the major components of the Act and Regulation.


REVIEW OF THE RADIATION CONTROL LEGISLATION

The EPA advised the Council at its 21 July 2000 meeting that a review of the Act and Regulation would be undertaken.

The reasons for the review were firstly, that in accordance with New South Wales government policy all primary legislation should be reviewed at least once every ten years to consider whether it continues to best serve the public interest, either in its current form, or at all.

Secondly, it was considered appropriate that the review of the Act should be considered in unison with the National Competition Policy review of radiation protection legislation which was being undertaken as a result of an agreement reached by the Council of Australian Governments (COAG) Senior Officials Group.

The Council met on a number of occasions to inform itself of the external drivers that could impact on the revision of the Act and Regulation, in particular the influence of the NCP review of national legislation and the proposal for national uniformity in radiation legislation. The Council at its October 2000 meeting commenced the provision of guidance to the EPA on issues that should be included in a public discussion paper.

As a consequence of these meetings a significant number of issues have been identified for discussion including recommendations relating to the amendment of the Act and Regulation.

LICENCES TO USE AND SELL RADIOACTIVE SUBSTANCES AND RADIATION APPARATUS

Section 6 of the Radiation Control Act regulates the use and sale of radioactive substances and radiation apparatus. Specifically, section 6(2) prohibits a person from using or selling any of the above substances and/or apparatus unless the person holds a current licence and complies with the conditions of the licence. An exemption from section 6 of the Act for specified categories of persons is provided in clause 8 of the Regulation.
Section 6 of the Act provides for the EPA to grant licences and impose conditions on licences on the recommendation of the Council. Following the Council’s recommendation, the Radiation Control Section of the EPA may issue a licence.

In considering licence applications, the Council was aware of its responsibilities under section 6(5) of the Act. Namely, the Council is not to recommend that a licence, or a temporary licence, authorising a person to use anything to which this section applies, be granted unless it is satisfied:

(a) that the applicant is a natural person and is a fit and proper person to hold the licence; and
(b) that the applicant has appropriate knowledge of the principles and practices of radiation hygiene and protection applicable to the activities proposed to be carried on by the applicant in pursuance of the licence.

For the reporting period ending 30 June 2001, 1623 licence applications were received, of which, on the advice of the Council, the EPA issued 1554 new licences. The Council recommended the granting of 299 new licences for the use or sale of radioactive substances and 1255 new licences for the use or sale of radiation apparatus. These numbers represent 19.2% and 80.8%, respectively, of the total number of new licences approved and issued during the year. Table 2 summarises the occupational categories of new licensees. Table 3 summarises the number of new licences issued by the EPA during the period 1992–93 to 2000–01.

During 2000–01 the EPA also renewed a total of 9864 licences: 2082 licences for radioactive substances and 7782 licences for radiation apparatus. At the end of the reporting period, there were 2645 active licences for radioactive substances and 9516 active licences for radiation apparatus, totalling 12,161 active licences.

### TABLE 2
Number of new licences issued (listed by occupational category) to use or sell radioactive substances and ionising radiation apparatus in 2000–01

<table>
<thead>
<tr>
<th>Occupational category</th>
<th>Radioactive substances</th>
<th>Ionising radiation apparatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental</td>
<td>-</td>
<td>267</td>
</tr>
<tr>
<td>Medical—specialist</td>
<td>4</td>
<td>54</td>
</tr>
<tr>
<td>Medical—other and related</td>
<td>39</td>
<td>469</td>
</tr>
<tr>
<td>Servicing/installation</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>Educational</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Safety</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Management</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>Scientific/research</td>
<td>59</td>
<td>33</td>
</tr>
<tr>
<td>Engineering</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>Technical</td>
<td>96</td>
<td>31</td>
</tr>
<tr>
<td>Company (licence to sell)</td>
<td>19</td>
<td>49</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>27</td>
<td>287</td>
</tr>
<tr>
<td>TOTAL</td>
<td>299</td>
<td>1255</td>
</tr>
</tbody>
</table>
TABLE 3  
Number of new licences issued by the EPA from 1992–93 to 2000–01

<table>
<thead>
<tr>
<th>Period</th>
<th>Radioactive substances</th>
<th>Radiation apparatus</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1992 – June 1993</td>
<td>290</td>
<td>722</td>
<td>1012</td>
</tr>
<tr>
<td>July 1993 – June 1994</td>
<td>347</td>
<td>716</td>
<td>1063</td>
</tr>
<tr>
<td>July 1994 – June 1995</td>
<td>454</td>
<td>1102</td>
<td>1556</td>
</tr>
<tr>
<td>July 1995 – June 1996</td>
<td>415</td>
<td>1695</td>
<td>2110</td>
</tr>
<tr>
<td>July 1997 – June 1998</td>
<td>364</td>
<td>776</td>
<td>1140</td>
</tr>
<tr>
<td>July 1999 - June 2000</td>
<td>295</td>
<td>882</td>
<td>1177</td>
</tr>
<tr>
<td>July 2000 - June 2001</td>
<td>299</td>
<td>1255</td>
<td>1554</td>
</tr>
</tbody>
</table>

REGISTRATION OF SEALED RADIOACTIVE SOURCES, RADIATION APPARATUS AND PREMISES

Section 7 of the Radiation Control Act requires registration of sealed radioactive sources and certain prescribed radiation apparatus. Section 8 of the Act requires premises on which unsealed radioactive substances are kept or used to be registered.

The purpose of registration is to:

- ensure that all sealed radioactive sources, radiation apparatus and premises in which unsealed radioactive sources are kept or used, and which are required to be registered, comply with specified minimum standards 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 radioactive sources, certain radiation apparatus and premises in which unsealed radioactive sources are kept or used.

The Council has recommended that the EPA grant registration of fixed radiation gauges and prescribed radiation apparatus if the application satisfies all applicable requirements of the Regulation. During the year ending 30 June 2001 the EPA granted 174 new applications and renewed 312 applications for registration of fixed radiation gauges. At the end of the period there were 486 registrations for fixed radiation gauges.

The Radiation Control Regulation 1993 was amended by the Radiation Control Amendment Regulation 2000 on 11 February 2000. The major amendments related to mandatory registration of radiation of apparatus used for diagnostic imaging purposes. The amendments also prescribed parts of Radiation Guideline No. 6 (EPA 1999) as the applicable requirements for registration.

As a consequence of these amendments, all x-ray equipment, such as that used for medical, dental, chiropractic and veterinary diagnostic purposes, were required to be registered with the EPA by 11 August 2000 but will not be required to meet the compliance testing requirements until February 2002.
Council has recommended that the EPA register all diagnostic imaging apparatus that has been certified as compliant with the applicable requirements of the Regulation. During the year ending 30 June 2001 the EPA granted 5358 applications for registration of diagnostic imaging apparatus. Table 4 summarises the number of diagnostic imaging apparatus that has been registered by the EPA during this period.

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Total No. Registered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Dental Radiography</td>
<td>2592</td>
</tr>
<tr>
<td>Fixed Radiography</td>
<td>832</td>
</tr>
<tr>
<td>Fixed Fluoroscopy</td>
<td>69</td>
</tr>
<tr>
<td>Fixed Radiography/Fluoroscopy</td>
<td>246</td>
</tr>
<tr>
<td>Fixed Mammography</td>
<td>161</td>
</tr>
<tr>
<td>Computed Tomography</td>
<td>174</td>
</tr>
<tr>
<td>Bone Mineral Densitometry</td>
<td>66</td>
</tr>
<tr>
<td>Mobile Dental Radiography</td>
<td>72</td>
</tr>
<tr>
<td>Mobile Radiography</td>
<td>686</td>
</tr>
<tr>
<td>Mobile Fluoroscopy</td>
<td>118</td>
</tr>
<tr>
<td>Mobile Radiography/Fluoroscopy</td>
<td>60</td>
</tr>
<tr>
<td>Mobile Mammography</td>
<td>17</td>
</tr>
<tr>
<td>Panoramic Radiography</td>
<td>265</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5358</strong></td>
</tr>
</tbody>
</table>

Council agreed that a review of the *Radiation Guideline No. 6* (EPA 1999) would be required after commencement of compliance testing and has asked the EPA to undertake this review.

To allow full implementation of the provisions of the Act in relation to the registration of sealed radioactive sources, certain radiation apparatus (other than the above) and laboratories in which unsealed radioactive sources are kept or used, there is a need to develop and establish guidelines that set out minimum standards as registration requirements.

Guidelines developed for radiation apparatus and sealed radioactive sources used for therapeutic purposes, and for premises in which unsealed radioactive sources are kept and used, have been developed jointly by the EPA and the Council. These guidelines have been endorsed by the Council, have undergone a cost–benefit analysis, and are soon to be released by the EPA for public comment.
ACCREDITATION OF RADIATION EXPERTS

Section 9 of the Radiation Control Act provides for the accreditation of Consulting Radiation Experts (CREs) by the EPA, on the recommendation of the Council. Clause 11 of the Regulation prescribes the following as the activities of a CRE:

(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) calibrating ionising radiation apparatus used for medical therapy

(d) calibrating ionising radiation apparatus used for diagnostic purposes

(e) assessing radiation apparatus, sealed radioactive sources and premises that are required to be registered under sections 7 or 8 of the Act for the purpose of certifying compliance with the requirements for registration

(f) advising on the design of premises, in relation to radiation safety requirements, in which sealed radioactive sources or radiation apparatus prescribed under section 7(1) of the Act are kept or used

(g) assessing plans for premises in which sealed radioactive sources or radiation apparatus prescribed under section 7(1) of the Act are kept or used, for the purposes of certifying compliance with any requirements for registration under section 7(5) of the Act

(h) assessing the integrity of any shielding of premises in which sealed radioactive sources 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 Radiation Control Amendment Regulation 2000 that commenced on 11 February 2000 amended clause 11 of the Regulation to include sub clause (f), (g) and (h), which provides a mechanism for assessing the design, adequacy and integrity of radiation shielding to be undertaken by accredited CREs.

Under clause 11(2) of the Regulation a CRE may be accredited as either a radiation assessor or radiation consultant. A radiation assessor is a person whose accreditation under section 9 of the Act allows the person to only carry out the activities referred to in subclause 1(e) of the Regulation. A radiation consultant is a person whose accreditation under section 9 of the Act allows the person to carry out any one or more of the activities referred to in clause 11(1)(a)–(d), whether or not it also allows the person to carry out the activities referred to in subclause 1(e).

The Council, for the period 2000–01, recommended the accreditation of 33 CREs in the Category of Diagnostic Imaging, four subject to the applicant completing an EPA induction seminar on the Act, Regulation and relevant guidelines. In addition, the EPA issued 8 CRE accreditations under mutual recognition, a total of 41 CREs for the period.

Table 5 summarises the total number of CREs accredited by the EPA as at 30 June 2001.
### TABLE 5
Number of CREs accredited as at 30 June 2001

<table>
<thead>
<tr>
<th>Category</th>
<th>Equipment</th>
<th>Radiation Consultant (RC)</th>
<th>Radiation Assessor (RA)</th>
<th>Number CREs Registered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Imaging</td>
<td>Mammography</td>
<td>RC</td>
<td>RA</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Dental (Intra-oral, OPG and Cephalometry)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radiography</td>
<td></td>
<td>RA</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Fluoroscopy</td>
<td>RC</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Computed Tomography</td>
<td></td>
<td>RA</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Bone Mineral Densitometry (incl. Veterinary &amp; Chiropractic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radiography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fluoroscopy</td>
<td></td>
<td>RA</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Computed Tomography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bone Mineral Densitometry (incl. Veterinary &amp; Chiropractic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premises*</td>
<td>Low &amp; Medium Level Laboratories</td>
<td>RC</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Industrial</td>
<td>Fixed Radiation Gauges</td>
<td>RA</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>82</strong></td>
</tr>
</tbody>
</table>

* Accreditation pending commencement of section 8 of the Act

**PERSONAL RADIATION MONITORING**

Under clause 15 of the Radiation Control Regulation, an employer must ensure that an occupationally exposed person in his or her employ using ionising radiation in the following fields is issued with an approved personal monitoring device (PMD) for detecting and measuring cumulative exposure to ionising radiation:

- radiotherapy
- industrial radiography
- nuclear medicine
- scientific research in medium- or high-level radiation laboratories
- diagnostic radiology.

The Regulation does not exclude any other person, or category of people, from being issued with a PMD.

During the reporting period ending 30 June 2001, no occupational high-dose cases were reported to the Council.
VOLUNTARY EXPOSURE TO IONISING RADIATION FOR SCIENTIFIC OR RESEARCH PURPOSES

Clause 20 of the Radiation Control Regulation prohibits a person from exposing any other person to ionising radiation for scientific or research purposes, except in accordance with the National Health and Medical Research Council (NHMRC) guideline, *Administration of Ionising Radiation to Human Subjects in Medical Research* (1984).

The NHMRC guideline requires that the approval of the EPA be obtained in studies where:

- the radiation dose to any individual subject in any year exceeds 5 mSv
- the radiation dose to a child or other persons incapable of giving informed consent exceeds 0.5 mSv
- the radiation dose to a baby, infant or foetus exceeds 0.1 mSv.

In the year ending 30 June 2001, the Council recommended that the EPA approve 6 medical research studies involving the use of radioactive substances or radiation apparatus. These studies are listed in Appendix 3.

APPOINTMENT OF RADIATION SAFETY OFFICERS AND RADIATION SAFETY COMMITTEES

Clause 28 of the Radiation Control Regulation provides for the EPA, on the recommendation of the Council, to require an employer to appoint a radiation safety officer (RSO) and/or a Radiation Safety Committee (RSC) for a workplace. If such a direction is made, the Council also determines the appropriate qualifications required by the RSO and determines the functions of the RSO and RSC.

The Radiation Safety Officer Committee, now in recess, was established by the Council to review:

- the organisations that should be required to appoint an RSO and an RSC
- the knowledge and skills required by a person who is to be appointed as an RSO
- the functions of an RSO and an RSC.

The RSO Committee produced two documents to help implement clause 28. The first, *RAC Statement on Radiation Safety Officers and Radiation Safety Committees*, provided advice to the Director General of the EPA on:

- the types of organisations that need to appoint a radiation safety officer and a radiation safety committee
- the qualifications needed for appointment as a radiation safety officer
- the functions of a radiation safety officer and a radiation safety committee.

The second document, *Radiation Control Guideline, Radiation Safety Officers and Radiation Safety Committees*, was developed to help employers fulfil their responsibilities under clause 28 of the Regulation. The Council recommended that the EPA adopt both documents. During 1999–2000, the EPA undertook a regulatory impact assessment on the proposed guidance. The documents and the impact analyses will be released by the EPA for public comment in the near future.
RADIATION ACCIDENTS

Clause 24 of the Radiation Control Regulation specifies the types of incidents that are classified as radiation accidents for the purposes of the Radiation Control Act. The mandatory requirements imposed on an employer in regard to the reporting and recording of radiation accidents are outlined in clauses 25 and 26 of the Regulation.

Accidents are normally caused by either deficiencies 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 normally recommends counselling and/or further training. In specific circumstances, disciplinary action may be warranted. The Council may also refer more serious accidents to the Health Care Complaints Commission.

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

The need for a nationally uniform system of classification for radiation incidents and accidents and the need to develop a cost-effective national system to collect and collate information and publish a national register for radiation incidents is highlighted as one of the 19 recommendations made in the NCP Review of Radiation Protection Legislation, Final Report May 2001. During the reporting period ending 30 June 2001, the EPA was informed of 10 instances where a radiation accident may have occurred. The Council investigated and considered each case individually and, where appropriate, made recommendations that, in its opinion, would reduce the risk of similar accidents recurring. A summary of the accidents and consequent recommendations made by the Council follows:

- A patient receiving palliative treatment was wrongly administered 31Gy in 5 fractions instead of the prescribed dose of 20Gy in 5 fractions.

  Council noted that the accident was the result of a fundamental error in dose calculation and sought further information. Council is waiting on this information.

- A patient receiving a thyroid scan was wrongly administered with 86 MBq 123-IMIBG instead of 90 MBq 201-TI. The effective dose received by the patient as a result of the accident was estimated at 1.2 mSv. The cause of the accident was due to the similarity between the two lead pots used to hold each substance.

  Council reviewed the case and recommended that further controls be instigated by the facility to correct deficiencies in standard operating procedures, in order to prevent the recurrence of similar accidents.

- A patient receiving a lung scan was wrongly injected with 200 MBq of MDP intended for a paediatric patient receiving a bone scan, instead of 180 MBq of 99m-Tc MAA. The estimated dose the patient received in total was 4.08 mSv. The total excess due to the maladministration is given as 1.22 mSv.

  Council reviewed the case and is waiting on further information as to why the syringe was left in the room, whether the syringe was labelled and the circumstances by which it was used on the wrong patient.

- A patient undergoing a nuclear medicine procedure was wrongly administered with 730 MBq of 99m- Tc pertechnetate instead of 99m- Tc MIBI. The accident occurred because the radiopharmaceutical dose was drawn from the wrong vial.
Council reviewed the case and recommended that further controls be instigated by the facility to correct deficiencies in standard operating procedures, in order to prevent the recurrence of similar accidents.

- Council was advised of the loss or theft from a hospital of 250µCi of Tritiated Dihydrotestosterone. The item was marked with a radiation symbol and was reported missing after hospital staff queried its non-delivery.

  Council noted the report and the need for a public education program on the identification of radiation symbols and improvement of security at delivery docks.

- A patient receiving a bone scan was wrongly administered with 135 MBq 99m-Tc MAA (lung imaging agent) instead of 800 MBq 99m-Tc MDP. The error occurred because the identification label on the drawn up dose was not checked.

  Council recommended that further controls be instigated by the facility to correct deficiencies in standard operating procedures, in order to prevent the recurrence of similar accidents.

- A patient referred for a bone scan was wrongly administered with 781 MBq 99m-Tc pertechnetate instead of 800 MBq 99m-Tc MDP. The accident occurred due to the dose being drawn from the incorrect vial.

  Council recommended that further controls be instigated by the facility to correct deficiencies in standard operating procedures, in order to prevent the recurrence of similar accidents.

- A patient wrongly underwent a CT-guided liver biopsy once it had been cancelled. The accident occurred as the booking for the biopsy was not cancelled and the patient was not advised although the cancellation had been recorded in the patient’s medical records. Council recognised that the primary cause of the accident occurred due to the patient records not being read by the radiologist performing the biopsy.

  Council recommended that further controls be instigated by the facility to correct deficiencies in standard operating procedures, in order to prevent the recurrence of similar accidents.

- A patient receiving a bone scan was wrongly administered with 1080 MBq 99m-Tc pertechnetate instead of 200 MBq 67-Ga citrate. The patient received an excess dose of 11.9 mSv due to the maladministration. The correct dose was drawn up and placed in a lead pot in the dispensing area of the hot lab, later an incorrect pot with the incorrect dose was selected and administered.

  The Council reviewed the cause of this accident and determined that it was caused by a person not following procedures. Council in the last period recommended that the standardisation of labelling for radiopharmaceuticals be raised by the EPA with the Radiation Health Committee (RHC). The RHC has raised this matter with Standards Australia in a bid to develop guidelines on the labelling of radiopharmaceuticals.

- A patient was wrongly administered with 283 MBq of 67Ga. The patient received an effective dose of 28 mSv due to this maladministration. The accident occurred due to the incorrect addressograph labels attached to medical imaging request forms.

  Council recommended that further controls be instigated by the facility to correct deficiencies in standard operating procedures, in order to prevent the recurrence of similar accidents.
The number of accidents reported to the EPA during the period 1994–95 to 2000–01 are:

July 1994 – June 1995  8
July 1995 – June 1996   7
July 1996 – June 1997   6
July 1997 – June 1998  8
July 1999 – June 2000  5
July 2000 – June 2001  10

NON-IONISING RADIATION

The proliferation in the use of laser equipment led the Council, in 1998, to recommend to the Minister that there was a need to initiate regulatory controls over the use of certain types of laser equipment. The Minister supported this recommendation.

A committee of inquiry into cosmetic surgery in NSW was established under the Health Administration Act 1982. The report of the committee, The Cosmetic Surgery Report—Report to the NSW Minister for Health (Health Care Complaints Commission 1999) also supported the recommendations of the Council with respect to the need for regulatory control of lasers used for health-related and cosmetic purposes.

The committee further recommended establishment of the Cosmetic Surgery Credentialling Council be established to facilitate development of guidelines and accreditation of training programs for the use of lasers by registered cosmetic surgery providers.

The Environment Protection Authority and NSW Health supported the recommendations of the committee that licensing and registration for the use of class 3B and 4 lasers be introduced under the Act.

The committee’s recommendation that a Cosmetic Surgery Credentialling Council (CSCC) be established is currently the subject of discussions between NSW Health and the Australian Medical Association (NSW Branch). Once established, the CSCC will liaise with the Radiation Advisory Council to ensure a uniform approach to the accreditation of training programs for the use of lasers in cosmetic surgery.

A REPORT ON THE RISK OF HEALTH EFFECTS FROM IONISING AND NON-IONISING RADIATION

During the reporting period ending 30 June 2001 the Council, at the request of the EPA, drafted a general awareness paper in relation to frequently asked questions regarding possible health effects of exposure to low-level radiation.

The need for the awareness paper was in response to ongoing public concern regarding mobile phones, lasers and power frequency sources.

It is anticipated that the paper will be made available to the public on the EPA website in the near future.
APPENDIX 1: GOVERNANCE ARRANGEMENTS AND PROCEDURES OF THE COUNCIL AS AT JUNE 2001

Role of Council
The Radiation Advisory Council has two broad functions:

- to provide high-level policy advice to the Minister administering the Radiation Control Act 1990, vide s 30 and 39 of the Radiation Control Act 1990
- to provide operational advice to the New South Wales Environment Protection Authority (EPA), vide s 6 to 10 of the Radiation Control Act 1990 and clauses 6, 10B, 14, 17, 18 and 28 of the Radiation Control Regulation 1993. [Note: At the EPA’s request, Council also advises on clause 20 of the Regulation.]

General Duties and Responsibilities of Council Members
Members of the Council owe their fiduciary duty solely to the Council when exercising their duties as a member of the Council. This requires members to act in good faith in the best interests of the Council, irrespective of the separate interests of any organisation, agency or profession that they might belong to or represent on the Council as the case may be. These fiduciary duties are owed individually by each member.

Each member of the Council more generally also has a duty to:

- act honestly and in good faith
- exercise care, skill and diligence
- exercise the powers, duties and responsibilities of the Council for the purpose for which they were conferred
- retain his/her discretionary powers
- avoid conflicts of interest.

Conflicts of Interest and Disclosures
Members must at all times avoid situations in which there is a real possibility of conflict arising between their personal interests or professional duties and the duty owed to the Council.

Such a conflict may exist when a member has a direct pecuniary interest in a matter that is before the Council. Alternatively, a conflict may occur when an issue listed for discussion by the Council involves an institution or organisation to which a member owes a duty in a professional context.

Consequently, members must be attuned to the possibility of conflicts of duty or interest arising between their duties to the Council and their personal and professional affairs. Therefore, when a member believes that such a situation may occur, whether it be actual or potential, full disclosure of the conflicting interest or duty must be made to the Council.

Disclosure of interest
Where a member has a potential conflict of interest in relation to any matter before the Council, the member must disclose that interest and the nature of it at the beginning of the meeting called to discuss the matter. Provision for such disclosures will normally be made at
Agenda Item 2—Adoption of Draft Agenda and Disclosure of Interests. Any disclosures made are to be recorded in the minutes.

**Action to prevent a conflict from arising**

A potential conflict having been disclosed, it is the duty of the meeting to determine what further action, if any, may be needed to prevent a conflict from arising. Such action could include:

- noting the potential conflict and its nature, and taking these into account during debate on the issue
- directing that the member abstain from any vote that may be called on the matter
- allowing the member to confirm the facts of the matter, but requiring the member to abstain from any discussion of it, or
- requiring the member to leave the meeting during discussion and debate on the matter, or some combination of the above. The more drastic of these actions would normally be reserved for a conflict involving direct pecuniary interest.

Where action is taken to prevent a conflict, the nature of that action is to be recorded in the minutes.

In the unusual event of serious on-going conflict, the question of the member’s continued membership of the Council may need to be considered.

**Confidentiality**

All material dealt with by Council should be treated as confidential by all Council members. The only records of Council that are not confidential are the confirmed minutes of Council meetings, once signed, and Council’s annual report to Parliament, once tabled by the Minister.

Confidential information available to Council members must be used only in ways that are consistent with the obligations of Council members to act impartially, with integrity and in the public interest.

Council members must take care to ensure that confidential information in their possession is kept secure, and that numbers of copies are kept to the minimum necessary. If such information is to be disposed of by a Council member, it must be destroyed.

Information available to Council members must not be used to obtain any advantage, whether direct or indirect, for themselves or for any other person or body.

Council members should avoid investments or business activities in relation to which they might reasonably be perceived to have access to confidential information which might give them an unfair or improper advantage over other persons.

**Exercise of Due Diligence**

Each member of the Council is expected to display the degree of care, skill and diligence that it is reasonable to expect from a member of the Council.

‘Reasonable expectation’ takes into account the knowledge, skill and experience that the member brings to the Council and could be reasonably expected to bring to it, noting the distribution of functions that each member of the Council brings different expertise to it. Care and diligence also include the concept of acting honestly in the discharge of one’s duties.
Members of the Council, being part-time, are not bound to give continuous attention to the affairs of the Council.

**Attendance at Council meetings and leave of absence**

All members of Council are to attend each Council meeting, unless granted leave of absence by Council.

Schedule 1 to the Radiation Control Act 1990 provides that the office of a member becomes vacant if the member is absent from four consecutive meetings of Council, for which reasonable notice has been given, except on leave granted by Council.

Accordingly, where a member finds that she/he is unable to attend a properly convened meeting, the member should submit a written request for leave to the chairperson prior to the meeting for consideration by Council at the meeting. Should the member be unable to apply for leave in advance, the member may request to be excused retrospectively by Council for having been absent.

Where a member has been absent without leave from four consecutive meetings, she/he may request to be excused retrospectively by Council. Any decision by Council to excuse the member, however, only has effect if the decision is made before the expiration of four weeks after the last of those meetings [Schedule 1, clause 5(1)(e) refers].

In addition, officers of the EPA who are providing secretariat support or advice to Council may attend all or parts of Council meetings as their duties necessitate, subject to the consent of the chairperson in consultation with Council.

The chairperson of Council, subject to the concurrence of Council, may invite other persons to attend the relevant parts of Council meetings to assist Council in its consideration of specific agenda items.

Otherwise, meetings of Council are closed to non-members.

**Council Meeting Procedures**

Schedule 1 to the Radiation Control Act 1990 provides that the procedure for calling meetings of the Council and for the conduct of business at those meetings is, subject to the Act and Regulations, to be as determined by the Council.

The Council normally determines its schedule of meetings for the financial year at the last meeting that it holds in the previous year. Normally, no fewer than four and no more than 12 regular meetings are to be scheduled in any financial year.

If an urgent matter arises at short notice, the chairperson is authorised to convene a special meeting if she/he judges that the situation so warrants.

Schedule 1 to the Act provides:

- that the quorum for a meeting is eight members
- that the presiding member will be the Chairperson or, in the chairperson’s absence, another member elected by the members present
- for the resolution of issues by voting, with a decision supported by a majority of votes cast at a meeting at which a quorum is present becoming the decision of the Council. The person presiding has both a deliberative vote and, in the event of an equality of votes, has a second or casting vote.

The agenda for Council meetings are normally to be structured as vide the proforma at Schedule 1 at the end of this appendix.
The chairperson of Council is to ensure that accurate minutes of each Council meeting are recorded listing details of:

- members and other persons in attendance, apologies received, grants of leave of absence, and disclosures of interest
- confirmation, with or without amendment, of previous minutes
- the nature (a brief synopsis) of agenda papers and other business discussed, the detail of decisions reached and whether those decisions were by consensus or resolved motion.

The chairperson of Council is to ensure that:

- the draft minutes are considered at the next Council meeting and accepted, with or without amendment, as being a true and correct record of business
- the confirmed minutes are signed and dated by the chairperson who presided at the meeting that the confirmed the minutes
- the signed minutes are made publicly available on request.

Council may specify other meeting procedures from time to time.

**Possible Conflicts between Council and EPA Positions**

The EPA is represented on Council through the chair. The EPA, therefore is entitled to put a position at Council meetings, as, indeed, is each of the 14 members of Council.

While it is desirable for Council to reach consensus on matters before it, Schedule 1 to the *Radiation Control Act 1990* provides at clauses 10(2) and 11 for voting to resolve a matter. A decision supported by a majority of votes cast at a Council meeting at which a quorum is present is the decision of Council. The person presiding at any Council meeting has a deliberative vote and, in the event of an equality of votes, has a second or casting vote.

The voting provisions of Schedule 1 are to apply to any situation where consensus cannot be reached, including those involving differences of position between the EPA (and/or other public authorities) and other members of Council.

**Council Committees**

Council forms committees from time to time, *vide s 31 of the Radiation Control Act 1990*, to assist it in formulating advice to the Minister or the EPA as the case may be. These committees are chaired by a Council member and may consist of both Council members and non-members. The latter are one means by which Council can expand the range of expertise available to it.

Committees generally are bound by the Act, the Regulation and these corporate governance and operating procedures, plus the terms of reference and any other directions given by Council.

At present there are two standing committees:

- Technical Committee
- Course and Competency Committee.

The membership and terms of reference of these committees are at Schedules 3 and 4 respectively.
Standing Advice to EPA on Operational Matters

Council has specific duties under sections 6–10 of the *Radiation Control Act 1990* to advice the EPA on aspects of the exercise of the EPA’s regulatory powers. For a number of these matters of a common routine type, it is feasible to provide advice generically. Matters for which the Council has provided generic advice are listed in Schedule 2 at the end of this appendix. The Council may add to this schedule from time to time.

For all other matters upon which the EPA may only act on the recommendation of the Council, Council expects the EPA to refer each matter individually to Council for its consideration and recommendation to the EPA.

Public Pronouncements and Media Liaison

As the primary role of Council is to provide advice to the Minister administering the *Radiation Control Act 1990*, the necessity for Council to make public pronouncements or to liaise with the media should rarely arise.

The chairperson of Council is the spokesperson for Council on matters on which Council has determined a position. No other member of Council may speak publicly on behalf of Council, unless specifically authorised to do so by Council.

Delegations to the Chairperson of Council

The chairperson of the Council is authorised to:

- sign correspondence on behalf of the Council
- answer routine correspondence addressed to the Council
- be the public spokesperson for the Council on matters on which the Council has determined a position
- convene unscheduled meetings at short notice in emergency situations.

Induction of New Members

There is a formal procedure for induction of new members. It includes:

- a reading package, including copies of
  - the *Radiation Control Act 1990*
  - the Radiation Control Regulation 1993
  - the most recent Radiation Advisory Council Annual Report
  - the most recent Radiation Advisory Council Strategic Direction Statement
  - a list of Council members and their professional contact details
  - any corporate governance and operating procedures statement that may be extant
  - a list of Council committees, their terms of reference and membership
  - standard licence conditions and qualification requirements for the use and sale of radioactive substances and radiation apparatus,
  - the current Council work program
  - background information on the EPA
- a briefing session covering the above matters and the current issues before the Council.
Allowances

Schedule 1 to the *Radiation Control Act 1990* provides that a member is entitled to be paid such allowances as the Minister from time to time determines.

The Minister has determined that non-government employees are to be paid sitting fees at the standard government rate. The Premier’s Department *Guidelines Government Boards and Committees* outlines the remuneration, allowances and appointment arrangements for part-time members of Council.
Schedule 1: Radiation Advisory Council Model Agenda

Introductory items
1. Opening of meeting
   1.1 Opening remarks
   1.2 Membership/attendance
2. Adoption of draft agenda and disclosure of interests
3. Minutes of previous meeting

Discussion items
4. 
5. ) as required
6. 

Committee reports
7. Technical Committee Report
8. Other committee reports as required

Non-discussion items (unless ‘starred’ at Agenda Item 2)
9. Correspondence
10. ) as required
11. 

Concluding items
12. Other business
13. Next meeting

Note: Council will normally ‘note’ non-discussion items, essentially treating them as information items, unless they have been ‘selected’ for discussion at the meeting.
Schedule 2: Standing Advice

The Council recommends that the EPA exercise its statutory powers in relation to the following matters without seeking further advice from the Council, subject to the specific case satisfying the detail in the relevant recommendation.

<table>
<thead>
<tr>
<th>Date</th>
<th>Agenda Item</th>
<th>Issue</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>16/12/94</td>
<td>7.1</td>
<td>Minor Variations to Licence</td>
<td>The Authority may grant a variation to a licence where the variation sought is minor.</td>
</tr>
<tr>
<td>01/04/96</td>
<td>6.8</td>
<td>Registration of Fixed Radiation Gauges</td>
<td>The Authority may grant a certificate of registration where an accredited assessor has so recommended.</td>
</tr>
<tr>
<td>20/06/97</td>
<td>7.9</td>
<td>Expired Licences</td>
<td>Where an applicant’s licence has expired, the Authority may grant a licence of the same type within a period not exceeding 28 days from the expiry date.</td>
</tr>
<tr>
<td>21/08/98</td>
<td>3.3</td>
<td>Standard Licence Applications</td>
<td>The Authority may grant a licence where the predetermined minimum qualifications recommended by the Council are met (standard licence).</td>
</tr>
<tr>
<td>16/06/00</td>
<td>6.0</td>
<td>Non-standard Licence Applications</td>
<td>The Authority may grant a non-standard licence during periods when the Council is in recess, subject to such approvals being ratified by the Council at its next meeting.</td>
</tr>
<tr>
<td>18/5/01</td>
<td>4.2.</td>
<td>Revoke Licence Conditions from former EPA employees</td>
<td>The Authority may revoke the special licence conditions relating to radiation inspectors once they cease to be EPA employees.</td>
</tr>
</tbody>
</table>

Standard Licences

For certain standard types of licence, Council has established a schedule of standard qualification criteria. These approval criteria are at Annexure A. Where a licence applicant meets these criteria, Council recommends that the EPA exercise its statutory responsibilities in relation to the application without seeking further advice from Council. For certain standard types of licence, Council has also established a schedule of standard licence conditions. These standard conditions are at Annexure B. Council recommends that the Authority take these into account as relevant when issuing standard licences.
Schedule 2 Annexure A – Qualification Criteria for Standard Types of Licence

All qualifications must be obtained from Australian institutions unless otherwise stated. The qualification for all other licence types will be assessed on an individual basis.

I Type Licences

Sale of Radiation Apparatus I2
No formal qualification required.

Radiation Oncologists I3
Must meet the following two prerequisites:

- Must be registered under the Medical Practitioners Act 1938.
- Must be recognised as a specialist with the Health Insurance Commission as a specialist oncologist.

Radiologists I4
Must meet the following two prerequisites:

- Must be registered under the Medical Practitioners Act 1938.
- Must be recognised with the Health Insurance Commission as a specialist in Radiology

Medical Diagnostic Radiographers and Radiation Therapists I14 and I14a (PDY)/I13 and I13a (PDY)
Must provide evidence of one of the following:

- AIR Provisional Accreditation (AIR Prov Accred) (issued for PDY)
- AIR Statement of Accreditation (AIR Stat Accred) (issued after successful completion of PDY)
- AIR Diploma Diagnostic Radiography (AIR Dip Diag Rad)
- AIR Diploma Radiation Therapy (AIR Dip Rad Therapy)
- AIR Certificate of Competence (AIR Cert Comp)
- Conjoint Board Certificate – Diploma of Qualification

General Practitioner or Nurse (Remote Operator) I15
Must meet two prerequisites:
1. Be a registered nurse or a medical practitioner
2. Completion of the RAC approved Remote Operators Course
   —University of Newcastle or SA (extended).

Dentist I20
Must be currently registered with the NSW Dental Board.
Dental Assistants I20
Must provide evidence of completing one of the following:
- Dental Radiography Certificate
- Dental Assistant Certificate
- Statement of Attainment in Dental Assisting Radiography

Dental Hygienists I20
Must provide evidence of completing a Diploma of Dental Hygiene.
Overseas dental hygienists must provide evidence of satisfactory assessment by either Curtin University (SA) or TAFE Gilles Plains (SA).

Dental Therapists I20 (only dental nurses employed by a government organisation are considered dental therapists)
Must provide evidence of completing a Diploma of Dental Therapy.

Dental Nurse 120 (as employed in the private sector)
Must provide evidence of completing one of the following:
- Dental Radiography Certificate (Dent Rad Cert)
- Dental Assistant Certificate
- Diploma of Dental Hygiene
- Diploma of Dental Therapy

Chiropractors I21
Must meet two prerequisites:
1. Current registration under the Chiropractic Act 1978 (NSW Chiropractors and Osteopaths Registration Board)
2. Provide evidence of completing at least one of the following:
   - Bachelor of Applied Science (Chiropractic) (B App Sc (Chiro))
   - Master of Chiropractic (MChiro)
   - Doctor of Chiropractic (DC)
     —Canadian Memorial Chiropractic College, Ontario

Medical Fluoroscopy I22
Must meet three prerequisites:
1. Must be recognised as a medical specialist in the field for which they are applying. This proof must be obtained from the Health Insurance Commission;
2. Must be registered under the Medical Practitioners Act 1938; and
3. Must have completed an RAC approved Radiation Safety Course in Medical Fluoroscopy.
**Veterinarians I23**

Must meet two prerequisites:

1. Must be registered with the NSW Department of Agriculture’s ‘NSW Veterinary Surgeon's Board’; and
2. Provide evidence of completing at least one of the following:
   - Bachelor of Veterinary Science (BVSc)
   - Master of Veterinary Science (MVS)
   - Doctor of Veterinary Medicine (DVM)

**Detection of Concealed Explosives I41**

Must provide evidence of completing:

- Standing Advisory Committee for the Prevention Against Violence (SACPAV) Bomb Technician Accreditation
R Type Licences

Sale of Radioactive Substances R2
No formal qualifications required.

Radiation Oncologist R3
Must meet the following two prerequisites:
• Must be registered under the Medical Practitioners Act 1938.
• Must be recognised as a specialist with the Health Insurance Commission as a specialist oncologist.

Nuclear Medicine Physician R4
Must meet the following two prerequisites:
• Must be registered under the Medical Practitioners Act 1938.
• Must be eligible for admission, or be admitted, as a member of the Australian and New Zealand Association of Physicians in Nuclear Medicine

Radiation Therapist R13/R13a
• AIR Provisional Accreditation (AIR Prov Accred) (issued for PDY)
• AIR Statement of Accreditation (AIR Stat Accred) (issued after successful completion of PDY)

Nuclear Medicine Technologist R14/14a
• Australian and New Zealand Society of Nuclear Medicine Accreditation (ANZSNM Prov Accred) (issued for PDY)
• Australian and New Zealand Society of Nuclear Medicine Accreditation (Accred ANZSNM (issued after successful completion of PDY)

Moisture/Density Gauges R30
Must provide evidence of successfully completing one of the following:
• ANSTO training certificate in Safe Use of Soil Moisture Gauges OR
• Coffey Partners or Coffey Geosciences training certificate in The Safe Use of Nuclear Type Soil Moisture and Density Gauges OR
• F Robotham training certificate in Radiation Safety in the Use of Soil Density and Moisture Gauges OR
• South Australian Health Commission Radiation Protection Branch examination ‘nuclear moisture and density gauges’.
• University of New England radiation safety training course certificate in ‘Safe Use of Nuclear Type Soil Moisture and Density Gauges’
• McKavanagh Engineering Services – Industrial Radiation Safety Level 2 Soil Density and Moisture Gauge Users
Gamma/Blood Irradiators R43

Must meet two prerequisites: Minimum qualifications – laboratory technician certificate or equivalent

- Trained in the operation of the equipment

Temporary Licenses

- All of the above apply as appropriate.
Schedule 1 Annexure B – Standard Licence Conditions for Standard Types of Licence

I Type Licences

Sale of Radiation Apparatus Type I 2

The licensee shall:

(i) sell radiation apparatus only to a person who holds a current licence, issued under the Radiation Control Act 1990, to use that radiation apparatus of the type, and for the purpose specified on the purchaser’s licence.

(ii) provide the following data to the Manager, Radiation Control Section of the Environment Protection Authority BEFORE the apparatus is installed.

(a) the name and licence number of the purchaser;

(b) the address of the premises where the apparatus will be installed;

(c) the make, model, maximum operating voltage, and maximum operating current of the apparatus.

Medical Radiation Therapy (Radiation Oncologist) Type I 3

The licensee must only use radiation apparatus for the purpose of radiation oncology.

Diagnostic Radiology (Radiologist) Type I 4

The licensee shall:

(i) use radiation apparatus only for the purpose of diagnostic medical imaging.

(ii) exercise general supervision throughout all stages of a computed tomography procedure.

Therapy Radiography (Radiation Therapist) Type I 13

The licensee shall:

(i) use radiation apparatus for the purpose of administering a therapy dose of radiation to a patient in accordance with the treatment prescribed and approved by a licensed radiation oncologist.

(ii) use radiation apparatus for the purposes of radiotherapy treatment planning and patient alignment at the direction of a licensed radiation oncologist.

Therapy Radiography (Radiation Therapist PDY) Type I 13A

The licensee shall:

(i) use radiation apparatus for the purpose of administering a therapy dose of radiation to a patient in accordance with the treatment prescribed and approved by a licensed radiation oncologist.

(ii) use radiation apparatus for the purposes of radiotherapy treatment planning and patient alignment at the direction of a licensed radiation oncologist.

(iii) use ionising radiation apparatus, only for the purpose of radiation therapy while working in a centre accredited by the NSW Professional Accreditation and Education Committee of the Australian Institute of Radiography in accordance with the AIR’s guidelines for the Professional Development Year, and shall work under the general supervision of a licensed radiation therapist.
Diagnostic Radiography Type I 14
The licensee shall:
(i) use radiation apparatus for the purpose of undertaking radiological examinations;
(ii) use fluoroscopic and fluorographic apparatus:
   (a) for the purpose of checking the final position of a patient; and/or
   (b) while working under the general supervision and direction of a licensed radiologist; and/or
   (c) while working under the direction of a registered medical practitioner who requires fluoroscopy during surgical and other procedures.
(iii) use computed tomography only while working under the general supervision of a licensed radiologist, or a registrar who is training in the discipline of diagnostic radiology at a hospital.

Diagnostic Radiography (PDY) Type I 14A
The licensee shall:
(i) use radiation apparatus for the purpose of undertaking radiological examinations;
(ii) use fluoroscopic and fluorographic apparatus:
   (a) for the purpose of checking the final position of a patient; and/or
   (b) while working under the general supervision and direction of a licensed radiologist; and/or
   (c) while working under the direction of a registered medical practitioner who requires fluoroscopy during surgical and other procedures.
(iii) use computed tomography only while working under the general supervision of a licensed radiologist, or a registrar who is training in the discipline of diagnostic radiology at a hospital.
(iv) use ionising radiation apparatus only for the purpose of diagnostic imaging and only while working in a centre accredited by the NSW Professional Accreditation and Education Committee of the Australian Institute of Radiography in accordance with the AIR Guideline for the Professional Development Year, and shall work under the general supervision of a licensed radiographer.

Radiography Remote Operator - GP and Nurse Type I 15
(i) (a) Subject to condition IV, the licensee shall use radiation apparatus only when a diagnostic radiographer who is licensed under the Radiation Control Act 1990 is unavailable.
(b) For the purposes of this condition, but subject to paragraph (d), a diagnostic radiographer is taken to be unavailable:
   (1) where a diagnostic radiographer is not in attendance at or on call for the radiology facility; and
   (2) a registered medical practitioner (ie, a person registered under the Medical Practitioners Act 1938) certifies that in the circumstances a radiological examination should be undertaken before arrangements could otherwise reasonably be made for the examination to be performed by a diagnostic radiographer.
(c) In the event that the licensee is a registered medical practitioner, the licensee shall not make any certification for the purposes of paragraph (b) (2) unless the licensee first makes reasonable inquiries and those inquiries indicate that arrangements cannot reasonably be made for the examination to be undertaken by a diagnostic radiographer.

(d) For the purposes of this condition, a diagnostic radiographer is taken to be available at all times in the locations described in the Schedule of Locations.

(ii) Subject to condition iv, the licensee must only use a radiation apparatus to produce plain radiographs of the following anatomical regions:

- Chest (frontal projection only).
- Fingers, hand, wrist, forearm, elbow, and arm with the shoulder girdle being a frontal projection only.
- Toes, foot ankle, lower leg, knee and upper leg with the pelvic girdle being a frontal projection only.

(iii) The licensee shall use radiation apparatus in accordance with the National Health and Medical Research Council Radiation Health Series Publication No 14 Recommendations for Minimising Radiological Hazards to Patients (1985).

(iv) The licensee may use any radiation apparatus at any time for any radiological examination (not being limited to those set out in condition (ii) if requested to do so by a medical practitioner who:

(a) reasonably considers that the life or well-being of the patient could be seriously threatened if the examination is not undertaken immediately; and

(b) certifies this on the request form.

(v) (a) The Environment Protection Authority (EPA) may, whenever it sees fit to do so, serve a written notice on the licensee, requiring the licensee to satisfy the EPA that his/her level of competence is sufficient to properly carry out the activities under this licence.

(b) If the EPA serves a notice under paragraph (a), the licensee must satisfy the EPA of his/her competence by undertaking the steps specified in the notice to the satisfaction of the EPA within the time specified in the notice.

Schedule of Locations


Dental Radiography Type I 20

The licensee shall:

(i) use radiation apparatus only for the purpose of dental radiography.

(ii) use radiation apparatus in accordance with the NHMRC Radiation Health Series Publication No. 20, Code of Practice for Radiation Protection in Dentistry (1987).
Chiropractic Radiography Type I 21

The licensee shall:

(i) use radiation apparatus only for chiropractic radiography.

(ii) be limited to the following radiographic images:

(a) Radiographs of the cervical spine using cassettes of up to 24 x 30 cm maximum size.

(b) Radiographs of the thoracic and of the lumbo-sacral spine using cassettes of 35 x 43 cm maximum size.

(c) Antero-posterior radiographs of the pelvis using cassettes of up to 35 x 43 cm maximum size.

(d) Lateral radiographs of the spine using cassettes up to 90 x 35 cm.

(e) Antero-posterior radiographs of the spine using cassettes up to 90 x 35 cm and using inverted T collimation.

(f) Radiographs of the extremities.

Medical Fluoroscopy (Medical Specialists other than Radiologists and Radiation Oncologists) Type I 22

The licensee shall:

(i) use radiation apparatus only for the purpose of producing a medical image to be viewed by the licensee while working in the medical speciality of the licensee; and

(ii) ensure that a licensed radiographer is in attendance when a high dose rate fluoroscopic unit is being utilised; and

(iii) keep a record of the fluoroscopic parameters utilised, including total screening time and patient identification, when a high dose rate unit is being used.

Note: For the purpose of this licence a fluoroscopy unit is considered to be high dose rate when it is likely that the product of the air kerma rate at the patient entrance surface and the total radiation exposure time for a procedure exceeds 80 mGy and would include, for example, most units used for cardiac catheterisation, angiography and interventional radiology. Dose area product (DAP) meters should be attached to high dose rate units to allow estimation of accumulated patient dose.

Veterinary Radiology Type I 23

The licensee shall:

(i) use radiation apparatus only for the purpose of veterinary radiology.

(ii) use radiation apparatus in accordance with NHMRC Radiation Health Series Publication No. 3 Code of Practice for the Safe use of Ionising Radiation in Veterinary Radiology - Parts 1 and 2 (1982).

Detection of Concealed Explosives I41

The licensee is restricted to the use of irradiating apparatus operating up to a maximum of 150 kVp at 6 mA.
R Type Licence

Sale of Radioactive Substances or items containing radioactive substances Type R 2
The licensee shall:

(i) sell a radioactive substance only to a person who holds a current licence, issued under the Radiation Control Act 1990, which permits the purchaser to use that radioactive substance for the purpose indicated on the licence.

(ii) ensure that all packages containing a radioactive substance, sold by the licensee, are transported in accordance with clause 23 of the Radiation Control Regulation 1993.

Medical Radiation Therapy (Radiation Oncologist) Type R 3
The licensee must only use a radioactive substance for the purpose of radiation oncology.

Medical Scintigraphy and Medical Therapy (Nuclear Medicine Physician) Type R 4
The licensee:

(i) must only use radioactive substances for the purpose of nuclear medicine or therapy treatment;

(ii) must be on-site at the practice location or ensure that a medical or radiology registrar in nuclear medicine who has been granted an exemption under clause 8 of the Regulation is on-site at the practice location during any nuclear medicine examination or therapy treatment;

(iii) is exempted from clause (ii) above if the practice location falls outside the local government areas listed on the schedule of locations;

(iv) must provide supervision, of a level specified below, to any person conducting any nuclear medicine examination or therapy treatment on their behalf;

(a) immediate supervision at all times to a medical or radiology registrar in nuclear medicine during the first 6 months of the person’s training;

(b) general supervision to all nuclear medicine technologists, and medical or radiology registrars in nuclear medicine who have competed the first 6 months of training;

(v) may provide supervision only with respect to the radioactive substances and radiation apparatus the licensee may use under this licence.

Dictionary

general supervision means supervision by a qualified supervisor who oversees the person being supervised and ensures that the person follows safe radiation work practices in relation to the use of radioactive substances or radiation apparatus.

immediate supervision means supervision by a qualified superior who is present at all times during, and is observing and directing, the use by the person being supervised of radioactive substances or radiation apparatus.

qualified person in relation to supervision for a particular radioactive substance or item of radiation apparatus, means a person who is the holder of a licence, which allows the person to provide supervision with respect to that substance or item.

Regulation means the Radiation Control Regulation 1993.
Schedule of Locations


Medical Radiation Therapy (Radiation Therapist) Type R 13

The licensee shall use equipment containing a sealed radioactive source, only for the purpose of administering a therapy dose of radiation to a patient in accordance with the treatment prescribed, approved and directed by a licensed radiation oncologist.

Medical Radiation Therapy (Radiation Therapist PDY) Type R 13A

The licensee shall:

(i) use equipment containing a sealed radioactive source, only for the purpose of administering a therapy dose of radiation to a patient in accordance with the treatment prescribed, approved and directed by a licensed radiation oncologist.

(ii) use equipment containing a sealed radioactive substances, only for the purpose of radiation therapy while working in a centre accredited by the NSW Professional Accreditation and Education Committee PAEC of the Australian Institute of Radiography in accordance with the AIR’s guidelines for the Professional Development Year, and shall work under the general supervision of a licensed radiation therapist.

Nuclear Medicine Technology Type R 14

The licensee:

(i) must only use radioactive substances for the purpose of nuclear medicine or therapy treatment;

(ii) must only use radioactive substances whilst under the general supervision of a qualified person, or a medical or radiology registrar in nuclear medicine who has been granted an exemption under clause 8 of the Regulation.

Dictionary

general supervision means supervision by a qualified supervisor who oversees the person being supervised and ensures that the person follows safe radiation work practices in relation to the use of radioactive substances or radiation apparatus.

qualified person in relation to supervision for a particular radioactive substance or item of radiation apparatus, means a person who is the holder of a licence, which allows the person to provide supervision with respect to that substance or item.

Regulation means the Radiation Control Regulation 1993

Nuclear Medicine Technology PDY Type R 14A

The licensee:

(i) must only use radioactive substances for the purpose of nuclear medicine or therapy treatment;
(ii) must only use radioactive substances whilst under the general supervision of a qualified person, or a medical or radiology registrar in nuclear medicine who has been granted an exemption under clause 8 of the Regulation;

(iii) must only work in a centre accredited by the Australian and New Zealand Society of Nuclear Medicine in accordance with the Society’s Accreditation Regulations (1987) when under the general supervision of a licensed nuclear medicine technologist.

Dictionary

**general supervision** means supervision by a qualified supervisor who oversees the person being supervised and ensures that the person follows safe radiation work practices in relation to the use of radioactive substances or radiation apparatus.

**qualified person** in relation to supervision for a particular radioactive substance or item of radiation apparatus, means a person who is the holder of a licence, which allows the person to provide supervision with respect to that substance or item.

**Regulation** means the Radiation Control Regulation 1993.

The licensee shall use an unsealed radioactive source.

**Soil Density and Moisture Determination Type R 30**

The licensee shall use a sealed radioactive source in accordance with the NHMRC Radiation Health Series Publication No. 11 *Code of Practice for the Safe Use of Soil Density and Moisture Gauges Containing Radioactive Sources* (1984).

**Gamma Irradiator R 43**

The licensee must only use a gamma irradiator for sterilisation of biological samples.
Schedule 3: RAC Technical Committee membership, terms of reference and operating procedures

Terms of reference

- provide advice to the Radiation Advisory Council pursuant to sections 6, 7, 8, 9 and 10 of the Radiation Control Act 1990 and clauses 6, 14, 17, 18, 20 and 28 of the Radiation Control Regulation 1993 pertaining to proposed licensing, registration and accreditation determinations
- provide advice on other regulatory matters that the Council may refer to from time to time
- when requested by the EPA, provide advice on research protocols involving the use of radioactive substances or other matters requiring technical expertise
- of its own motion, make recommendations to the Council on emerging issues, technical developments, regulatory matters or policy development.

Membership

Committee members are to be appointed by the Council, and the committee is to consist of the following persons:

- a member of Council appointed by Council as independent chair
- a physician in nuclear medicine
- a radiologist
- a radiotherapist
- a medical physicist
- a health physicist
- a diagnostic radiographer
- an industrial radiographer
- an expert in non-ionising radiation
- a community representative

Other than the chairperson, who is to be a member of Council appointed by Council, Committee membership is not confined to members of the Council.

Standing operating procedures

- Meetings are to be held at least monthly, prior to the monthly Council meeting, unless otherwise decided by the Council.
- The chairperson is to chair the meeting unless unable to attend, in which case the meeting is to elect another Council member to the chair for that meeting.
- The Chairperson is to report the Committee’s recommendations to the Council. Reporting is to be by exception and is to highlight any matters that the committee considers that the Council as a whole should discuss or determine.
- The report to the Council is to be the official record of the Committee’s deliberations. Separate minutes need not be maintained.
• A quorum for a meeting is four specialist members. Notwithstanding this requirement, if the members present do not have the expertise to provide the advice needed on a particular matter, the committee is not to make a recommendation to the Council until the necessary advice has been obtained.

• Members are to declare any interest that they have in matters on the Committee agenda at the start of each meeting. These declarations are to be recorded in the minutes, together with the action, if any, taken to avoid conflict.

• Decisions are to be by consensus. Where consensus cannot be reached, the various views are to be provided in the report to the Council.

• In other respects, the committee is to follow the procedures of the Council, as applicable.

• The EPA will provide staff/administrative support for the committee.
Schedule 4: RAC Course and Competency Committee membership, terms of reference and operating procedures

Terms of Reference

• Provide advice to the Radiation Advisory Council, pursuant to sections 6(5) and 9(3) of the Radiation Control Act 1990 pertaining to proposed licensing and accreditation qualifications, and, in particular, to:
  ▪ define the generic attributes and competencies for each of the licence categories;
  ▪ develop a guideline for the weighting of course content;
  ▪ determine guidelines for the appropriate types of assessment suitable for each licence category;
  ▪ liaise and consult with professional qualifying bodies when establishing competencies and attributes;
  ▪ where appropriate, observe a course to establish whether the experience provided is suitable to deliver the competencies and attributes required;
  ▪ recommend courses for approval; and
  ▪ advise on the frequency of review.
• Provide advice on other regulatory matters that Council may refer to it from time to time.
• Of its own motion, make recommendations to Council on emerging issues, technical developments, regulatory matters or policy development relating to suitability of or necessity for approved courses.

Membership

The Committee members are to be appointed by Council and are to consist of the following persons:

  ▪ a diagnostic radiographer
  ▪ a health physicist
  ▪ a medical physicist
  ▪ a non-ionising radiation physicist
  ▪ an industrial radiographer
  ▪ a general professional educator
  ▪ co-opted members as required.

The Chairperson to be one of the Committee members. She/he is to be appointed by the Council and must be a member of Council. Otherwise, Committee membership is not confined to members of Council.

Standing Operating Procedures

• Meetings are to be held as determined by the Committee, unless otherwise decided by Council.
• The Chairperson is to chair the meeting unless unable to attend, in which case the meeting is to elect another Council member to the chair for that meeting.
• The Chairperson is to report the Committee’s recommendations to Council. Reporting is to highlight any matters that the Committee considers that Council as a whole should discuss/determine.

• The report to Council is to be the official record of the Committee’s deliberations. Separate minutes need not be maintained.

• A quorum for a meeting is three members. Notwithstanding this requirement, if the members present do not have the expertise to provide the advice needed on a particular matter, the Committee is not to advise on it until the necessary advice has been obtained.

• Members are to declare any interest that they have in matters on the Committee agenda at the start of each meeting. These declarations are to be recorded in the report to Council together with the action, if any, taken to avoid a conflict.

• Decisions are to be by consensus. Where consensus cannot be reached, the various views are to be provided in the report to Council.

• In other respects, the Committee is to follow the procedures of Council, as applicable.

• The EPA will provide staff/administrative support for the Committee.
## APPENDIX 2: MEMBERSHIP OF COMMITTEES OF THE COUNCIL DURING 2000–01

### TECHNICAL COMMITTEE

<table>
<thead>
<tr>
<th>Member</th>
<th>Profession</th>
<th>Meetings attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr D Leece</td>
<td>Chief Scientist, NSW EPA</td>
<td>9</td>
</tr>
<tr>
<td>Dr P Pasfield</td>
<td>Radiologist</td>
<td>6</td>
</tr>
<tr>
<td>Mr J Robinson</td>
<td>Diagnostic radiographer</td>
<td>8</td>
</tr>
<tr>
<td>Dr G Larcos</td>
<td>Physician in nuclear medicine</td>
<td>4</td>
</tr>
<tr>
<td>Dr K Crawford</td>
<td>Community representative</td>
<td>8</td>
</tr>
<tr>
<td>Mr Michael Carter</td>
<td>Health physicist</td>
<td>7</td>
</tr>
<tr>
<td>Mr C Hockings</td>
<td>Industrial radiographer</td>
<td>7</td>
</tr>
<tr>
<td>Mr L Collins</td>
<td>Expert in non-ionising radiation</td>
<td>7</td>
</tr>
<tr>
<td>Dr Donald McLean</td>
<td>Medical physicist</td>
<td>9</td>
</tr>
<tr>
<td>Dr Michael Izard</td>
<td>Radiotherapist</td>
<td>9</td>
</tr>
</tbody>
</table>

### COURSE AND COMPETENCY COMMITTEE

<table>
<thead>
<tr>
<th>Member</th>
<th>Profession</th>
<th>Meetings attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr J Robinson (Chairperson)</td>
<td>Diagnostic radiographer</td>
<td>3</td>
</tr>
<tr>
<td>Dr K Crawford</td>
<td>Community representative</td>
<td>2</td>
</tr>
<tr>
<td>Mr Michael Carter</td>
<td>Health physicist</td>
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</tr>
<tr>
<td>Dr Donald McLean</td>
<td>Medical physicist</td>
<td>3</td>
</tr>
</tbody>
</table>
APPENDIX 3: APPROVED MEDICAL RESEARCH STUDIES
(INVOLVING ADMINISTRATION OF IONISING RADIATION TO HUMANS)

Prince of Wales Hospital
- rTMS as an antidepressant treatment

Royal Prince Alfred Hospital
- Pilot study of $^{195m}$ Pt-cisplatin and $^{195m}$ Pt-carboplatin in patients with cancer

St George Hospital
- A Phase 1/11 study of $^{131}$ I Sibrotzumab in patients with advanced or metastatic non-small cell lung cancer
- Phase 1 & 2 Clinical trial of Targeted Alpha Therapy (TAT) for Recurrent Subcutaneous Melanoma

John Hunter Hospital
- Recombinant P-Selectin Glycoprotein Ligand-IG Trial for Patients with Acute Myocardial Infarction

Westmead Hospital
- Combined Assessment of Pre- and Post-Synoptic Dopaminergic Function in Parkinsonian Syndromes