



Statement on Changes to Occupational Dose Limit for Lens of the Eye (November 2011)

Australia's radiation dose limits are currently embodied in ARPANSA's Radiation Protection Series publication 1 (RPS 1), *Recommendations for Limiting Exposure to Ionizing Radiation and National Standard for Limiting Occupational Exposure to Ionizing Radiation (2002)*¹. The limits are reflected in RPS 6 *National Directory for Radiation Protection* (NDRP)² and radiation legislation across Australia. These limits are based on the 1990 recommendations of the International Commission on Radiological Protection (ICRP) in its publication 60 (1991)³.

In December 2007 the ICRP published new recommendations (ICRP publication 103)⁴. As a result, the Radiation Health Committee (RHC) has commenced a process of revising RPS 1 to take account of those recommendations and other recent international developments such as the IAEA's revision of the International Basic Safety Standards (BSS)⁵. A broad Consultative Group has been appointed to participate in the development process and there will be wide public consultation when the RHC has approved the drafts. All changes to RPS 1 that could have an economic or social impact will be examined in a regulatory impact statement, which will also be released for consultation.

In a 'Statement on Tissue Reactions' released in April 2011, the ICRP discussed recent epidemiological evidence relating to tissue reaction effects for doses to the lens of the eye. For occupational exposure in planned exposure situations the Commission now recommends an equivalent dose limit for the lens of the eye of 20 mSv in a year, averaged over defined periods of 5 years, with no single year exceeding 50 mSv.

The ICRP now considers the threshold for tissue reactions to be an absorbed dose of 0.5 Gy. Based on the new limit for the lens of the eye, this effect threshold could feasibly be reached within a working lifetime. The end point of concern for the eyes is cataract formation. This latest ICRP recommendation, which represents a significant reduction in the occupational dose limit for the lens of the eye from 150 mSv to 20 mSv, has been incorporated into the revised BSS recently published by the IAEA. It is proposed that the revised limit will also be included in the replacement for RPS 1 and hence taken up in Australia.

The RHC recommends that relevant radiation users, such as interventional radiologists and cardiologists, should be aware of the changed occupational dose limit for the lens of the eye and that it will be included in the revision of RPS 1 and will in time become mandatory. Workplaces are encouraged to adopt this new value in advance of regulatory change, to avoid injury and ensure that relevant workers are afforded appropriate occupational protection in line with current international recommendations. Radiation safety officers responsible for such practices should familiarise themselves with this significant change, and consider any implications arising from implementing them.

In particular consideration should be given to: assessment of potential eye doses for affected users, evaluation of adequacy of current methods of occupational dose monitoring, whether modification to work practices and use of personal protective equipment (e.g. lead glasses or ceiling suspended shields) is required. Other operational issues such as staff training may also need to be reviewed for certain practices.

The Radiation Health Committee recommends that where practicable, radiation users commence implementing the new dose value as soon as possible. The RHC would also appreciate being informed of implementation issues with a significant economic or other impact. This can be done by emailing the Committee secretariat at secretariat@arpansa.gov.au.

- 1 ARPANSA, *Recommendations for Limiting Exposure to Ionizing Radiation* (1995) and *National Standard for Limiting Occupational Exposure to Ionizing Radiation* [NOHSC:1013(1995)] (Republished March 2002)
- 2 ARPANSA, *National Directory for Radiation Protection* (First published August 2004).
ICRP, *1990 Recommendations of the International Commission on Radiological Protection*, ICRP Publication 60, Annals of the ICRP, Vol 21, No 1-3 (1991)
- 3 ICRP, *The 2007 Recommendations of the International Commission on Radiological Protection*,
- 4 ICRP publication 103, Annals of the ICRP Vol 37, No 2-4 (2007)
- 5 IAEA, *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards – Safety Standards Series No. GSR Part 3 Interim Edition* (2011)