



Radiological Protection Institute of Ireland
An Institiúid Éireannach um Chosaint Raideolaíoch

Personal Dosimetry in Dental Radiology

Position Statement

Personal Dosimetry in Dental Radiology

Radiological Protection Institute of Ireland
3 Clonskeagh Square,
Dublin 14

May 2011

Background

The RPII has recently reviewed its licensing requirements for the wearing of personal dosimeters in dental radiology. The results of the review indicate that:

- In comparison to the inventory of dental X-ray equipment that was present in Ireland at the time the 1994 Code of Practice for Radiological Protection in Dentistry was written, the inherent design features of dental X-ray equipment have significantly improved with no evidence of substandard X ray units in operation.
- All dental licensees have now appointed a Radiation Protection Adviser (RPA), which has ensured that all dental X-ray equipment has been, or can be, commissioned in order to confirm that it is working in a correct and safe manner.
- With the appointment of RPAs, dentists now have access to expertise in radiation protection to enable them to carry out a risk assessment for their practice.
- European and other international guidance on the requirement for dentists to use personal dosimetry is not prescriptive.
- A review of the RPII's dosimetry records indicates no evidence of doses being routinely received in the dental sector. In the last ten years there has only been one reportable dose, i.e. an effective dose greater than 2 mSv in a continuous 16 week period, from approximately 150,000 measurements made in this sector.
- The probability of a dentist receiving a dose in excess of 1mSv in a year is very low.

New Position

The RPII is of the view that mandatory personal dosimetry is no longer warranted for dental radiology where a risk assessment, performed by the RPA in conjunction with the dentist, indicates that operators (staff or students in third level education) are not expected to receive doses in excess of 1.0 mSv/year.

The RPII advises that dental practices who are considering reviewing their personal dosimetry arrangements should ask their appointed RPAs to perform a risk assessment¹ to determine whether or not the operator(s) of dental X-ray equipment, or other relevant staff, are liable to receive a dose exceeding 1.0 mSv in a year². The risk assessment must take account of local work

¹ Further information on risk assessments is provided in Appendix I.

² It is likely that for private dental practices this risk assessment will have recently been performed by the RPA when he/she determined/reviewed the shielding requirements for each dental licensee to whom advice is provided.

practices and particular attention should be paid to panoramic radiography and cone beam CT (CBCT) units as there may potentially be greater doses to operators from the use of these types of units. The risk assessment should estimate the annual operator doses based on realistic workloads and the type of equipment in use. The results of the assessment can then be used to determine whether personal dosimetry is required.

The RPII advises that the determination of whether personal dosimetry is required for a given dental practice should take account of its new recommendations:

- Where operators and other staff are expected to receive doses in excess of 1.0 mSv/year, continuous personal dose monitoring will be required in accordance with the requirements of S.I. No. 125 of 2000.
- Where operators and other staff are not expected to receive doses in excess of 1.0 mSv/year, personal dosimetry is not required.
- Notwithstanding the requirements for personal dosimetry, all dental practices are expected to implement the ALARA principle (As Low As Reasonably Achievable) in respect of all activities involving the use of X-ray equipment.

In the case of pregnant exposed workers it is recommended that their work practices should be reviewed by the appointed RPA. The review shall ensure that the level of protection provided for the unborn child is comparable to that provided for members of the public, and shall consider whether a personal monitoring programme should be implemented for the pregnant member of staff.

The RPII would also reiterate its advice that the person operating the X-ray unit should stand at a distance of at least two metres from the patient's head during exposure. In situations where the room is too small to permit this, the operator should stand behind a protective screen or outside the examination room.

This new RPII policy on the requirements for personal dosimetry in dental radiology amends Section 10 (vi) of the 1996 Code of Practice for Radiological Protection in Dentistry and will be included in the revised Code of Practice.

Appendix I – Risk Assessment

The risk assessment shall be carried out by the RPA in conjunction with the licensee. The assessment shall estimate all expected annual staff doses arising from the use of X-ray equipment in the practice and should take account of the following considerations:

- Identification of people at risk
- Realistic workload i.e., number of X-rays taken
- Type of X-ray unit(s) used
- Radiation output of the X-ray unit(s)
- Types of scans performed
- Layout of the surgery and structural shielding
- Operator position
- The likelihood of recording a reportable dose (i.e. an effective dose greater than 2 mSv in a continuous 16 week period)
- Previous dose records for the staff performing similar work

This list is not exhaustive and other considerations, such as local policies, should also be taken into account.

The risk assessment shall be documented and retained on file by the dentist and may be requested during inspection by the RPIL.



Radiological Protection Institute of Ireland

An Institiúid Éireannach um Chosaint Raideolaíoch

Mission Statement

"To ensure that people in Ireland are protected from the harmful effects of ionising radiation in accordance with best international practice"

Contact Us

Radiological Protection Institute of Ireland

3 Clonskeagh Square

Dublin 14

Ireland

Tel: +353 1 2697766

Fax: +353 1 2697437

Email: rpil@rpil.ie

Website: www.rpil.ie