



Radiation Protection Advice and Services
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NEWSLETTER 1 – Winter 2013/14

PROPOSAL FOR THE CURRENT DOSE LIMIT FOR LENS OF THE EYE TO BE REDUCED

Background

In April 2011 the International Commission on Radiological Protection (ICRP) issued a draft report "Early and late effects of radiation in normal tissues and organs: threshold doses for tissue reactions and other non-cancer effects of radiation in a radiation protection context". The report included a summary of new evidence for development of lens opacities which was based on the following data:

Repeated CAT scans;
Japanese A-bomb survivors;
Therapeutic Radiotherapy (both non-malignant disease and cancer);
Victims of the Chernobyl accident;
Astronauts;
Residents of contaminated buildings;
Radiation technologists and interventional radiologists;
Interventional cardiologists.

The new data, together with animal models, showed that lens opacities occur at doses <1 Gy. Further evidence for lower thresholds has also been emerging in recent years from more sophisticated techniques of scoring damage, longer follow up (incidence increases with latency), and more data in the low dose region. In the light of this information the ICRP task group now believe that the threshold for protracted exposure is around 0.5 Gy. The draft report also contains a proposal for **the dose limit for occupational exposure to the lens of the eye to be reduced to 20 mSv/y (from 150 mSv/y)**.

When will this reduced dose limit become law?

The European Commission (EC) brought forward a formal proposal for a new Basic Safety Standards Directive that brings together and consolidates several existing EURATOM Directives. The revision of the Directive has had a number of influences, including the recommendation referred to above by ICRP to reduce the dose limit for the lens of the eye. The Department of Energy and Climate Change (DECC) have overall UK government responsibility for negotiating the revision of the EU Basic Safety Standards Directive. However a cross government group has also been convened to ensure a consistent approach across UK government. The Health and Safety Executive (HSE) is working closely with DECC, other government departments, and officials from the devolved administrations, to contribute to negotiations. When the outcome of the negotiations is known, another RAPAS newsletter will be issued containing advice on the likely timetable for the introduction of the revised statutory dose limit.

WHAT ARE THE IMPLICATIONS FOR YOUR WORK WITH IONISING RADIATION?

Working procedures, radiation risk assessments and local rules

The change will result in a considerable reduction in the dose limit for the lens of the eye and may have significant implications for those working in the medical sector and the nuclear industry. In addition, (although to a lesser extent) this may also affect other users of ionising radiation, such as veterinary personnel who need to manually restrain animals; or medical servicing/calibration company employees working in close proximity to x-ray machines. It would therefore be prudent for these radiation employers to check their working procedures in order to assess if the exposure of the lens of the eye¹ can be reduced. For example this could be achieved by a change to the radiation safety procedures or the introduction of new personal protective equipment. Radiation risk assessments and local rules may also need to be revised if changes to working arrangements have been identified.

¹ This might include a trial period of dose monitoring for the lens of the eye
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DO YOU NEED TO ACT NOW?

If you are a client of Radiation Protection Advice and Services, you do not need to do anything at the moment as your current safety arrangements are satisfactory. Also the revised dose limit is yet to become law. The issues raised by the new proposal will be covered by the Radiation Protection Adviser during the next formal visit.

BACKGROUND INFORMATION AND SCIENTIFIC BASIS FOR THE NEW PROPOSAL

Further information on the scientific background to the new proposal is covered in ICRP 118

“ICRP Statement on Tissue Reactions
and
Early and Late Effects of Radiation in
Normal Tissues and Organs – Threshold
Doses for Tissue Reactions in a Radiation
Protection Context”

Be warned that the publication is rather lengthy, however if you want an electronic version of this publication sending to you please let me know. As guide, you should concentrate on the following sections which refer to the eye:-

Part 1
Statement on Tissue Reactions
Page 11, paragraph 3

Part 2
Executive summary
Page 21 (i) and page 23 (o)

All of section 2.6, starting at page 116

All of section 3.3.6, starting at page 247

All of section 4.7, starting at page 293

Conclusions, Section 4.13, pages 711/712/713 and 714

Annex A summary table, starting at page 309

That's it !!

A handwritten signature in black ink, appearing to read "m. omahony", is written over a faint, circular watermark.

Michael O'Mahony – Radiation Protection Adviser

3 January 2014