

Proposal for huge reduction in annual eye dose limits

There is growing evidence to suggest that the threshold dose at which radiation exposure can lead to the formation of cataracts is significantly lower than previously thought. As a result, the International Commission on Radiological Protection (ICRP) has issued a proposal to reduce the annual dose limit to the lens of the eye for radiation workers from 150 mSv to 20 mSv.

The new evidence is based on an increased incidence of effects that have been noticed with increasing time since exposure for various exposed populations and improved techniques for detecting and measuring changes in the lens of the eye. The different groups in which radiation-induced opacities have been found include interventional radiologists and cardiologists as well as Japanese atomic bomb survivors and clean-up workers from Chernobyl.

If the proposed dose limit change is adopted, it is likely to be incorporated into UK legislation with significant implications for working practices in diagnostic radiology. The Health and Safety Executive have indicated that staff likely to receive annual eye doses in excess of 15 mSv would have to be classified, a substantial reduction on the current classification level for eye doses under the Ionising Radiations Regulations 1999 of 45 mSv.

A reduced dose limit is likely to lead to more widespread monitoring of eye doses and use of eye protection to avoid increased numbers of staff becoming classified. RPC will provide further advice on this matter if any regulatory changes become imminent. In the meantime it is recommended that any departments with staff likely to be at risk of significant exposure to the eyes review their dose records and the protective measures that are in place.

IR(ME)R 2011 amendment issued

A minor amendment to IR(ME)R 2000 has recently come into force. The Ionising Radiation (Medical Exposure) (Amendment) Regulations 2011 extend the scope of IR(ME)R 2000 to include *"any exposure of an asymptomatic individual"*.

The amendment is thought to be designed to give regulators greater control over services that offer walk-in self-referral for diagnostic tests, usually involving CT. However, it may also affect exposures such as whole body scanning at airports and self-referral DEXA scanning. The amendment does not aim to outlaw such practices but users should ensure that there are clear written referral guidelines for all exposures carried out on asymptomatic persons.

Update on RPC's carbon footprint

As part of RPC's ongoing project to reduce the impact of our activities on the environment, we have been purchasing compact dosimeters and developing innovative survey methods that allow us to fully check your X-ray equipment with the minimum of bulky test kit.

This has allowed us to make much more use of public transport in visiting our clients, who are spread all across the whole of the UK. You may have noticed that RPC staff turning up with trolleys piled high with boxes are a thing of the past!

As a result of our efforts we have cut our annual car mileage by an impressive 50%. We estimate that this, together with a reduction in paper usage after implementing electronic reporting, has cut RPC's carbon footprint by well over 10%. We believe it's a good start, but will continue to look for ways of making further reductions.

RPC provides support for digital mammography users

Users of digital mammography equipment should be aware that earlier this year RPC published an addendum to its Quality Assurance handbook to cover the tests required by NHSBSP Equipment Report 0702 – "Routine QA for Full Field Digital Mammography Systems". The new chapter is relevant to both CR and DR mammography and contains detailed instructions on completing the tests (with pictures where necessary) and forms for recording the

results. RPC is also supplying its customers with a contrast-to-noise (CNR) phantom for performing the tests. The phantom, which is purpose-designed to enable the user to perform CNR tests in a systematic and reproducible manner, is free of charge to our customers. Users should contact Marcus Blunkett at RPC (tel: 020 8725 3096, email marcus.blunkett@stgeorges.nhs.uk) for a copy of the addendum and to order the CNR phantom.

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RPC News

In partnership with Medical Physics at

University Hospital Southampton 
NHS Foundation Trust

Care Quality Commission takes action to ensure x-ray images are evaluated

The Care Quality Commission has recently written to all NHS Chief Executives to remind them that all medical exposures must result in a

"clinical evaluation of the outcome". Their letter refers to a recent audit that showed that images reported by referring clinicians other than radiologists had no written outcome in around 50% of cases. The letter states that this is a statutory requirement of IR(ME)R 2000 and dictates that Chief Executives must be aware of their degree of compliance via audit and have initiatives to improve this. The CQC inspectors will expect to see a compliance audit report during their inspection visits. RPC would like to remind its customers that a policy should be in place for ensuring that all images result in a written evaluation of the outcome. Where images are not formally reported by a radiologist or film reader, a written agreement must be in place for the referring clinician to record the findings from the X-ray in the patients' notes and this must be audited from time to time to ensure that the written evaluation has taken place.

WELCOME to the latest issue of RPC's occasional Radiation Protection Newsletter.

If you have been on the receiving end of the wrath of a CQC or HSE inspector you will find our articles essential reading. One area of concern for the HSE inspectors was the lack of training. To assist with your training requirements, enclosed with the newsletter is a sheet with RPC's training course dates for 2012.

One of RPC's longest serving members, David Arnold, recently retired. David is fondly remembered in the article on Page 2.

RPC is constantly striving to find ways of assisting its clients. A new innovation is a testing service for personnel protective equipment such as lead coats etc. Details of this can be found on Page 3.

If you have any comments or questions on any of the articles included in this newsletter please do not hesitate to get in touch – we would love to hear from you!

Best wishes

Kathryn St John-Mosse
Editor

St George's Healthcare 
NHS Trust

THE RADIOLOGICAL

PROTECTION CENTRE
Incorporating The John Perry Laboratory

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Health and Safety Executive inspections of Diagnostic Radiology – the findings

The Health & Safety Executive's Specialist Radiation Team has recently undertaken proactive hospital inspections to check for compliance with the Ionising Radiations Regulations 1999 (IRR99). Their online news bulletin gives a summary of the key findings, and RPC believe that this is essential reading for anyone wanting to stay on the right side of the inspectors.

The main areas of concern detailed in their inspection include:

I. Prior Risk Assessments

These were often found to be 'not suitable and sufficient' or were undocumented, a point which is consistent with the findings of RPC's own audits. RPC recommends that next time you review your risk assessments you take the time to ensure that the actual risks and control measures of your particular department are fully considered and that you resist the temptation to rely too heavily on generic risk assessments which may not be relevant to your own circumstances. Remember that if you are starting any new practices or introducing new equipment, a prior risk assessment is required and RPC can assist with this.

II. Contingency Plans

Local rules should contain contingency plans for foreseeable accidents. However, the HSE wants to see that these have been rehearsed and that all relevant people know their roles in the plan. In the case of X-ray equipment, the

David Arnold retires



After 23 years of service, RPC's principal physicist, David Arnold finally retired in June. David's enormous contribution during that time as both manager of the John Perry Laboratory and RPC's Deputy Director will long be remembered. David will be missed by colleagues and customers alike and we all wish him a happy and healthy retirement.

contingency plan may simply be to switch off the power to the unit and inform the appropriate person, but in situations where there is a risk of contamination from radioactive substances, more in depth contingency plans will be required.

III. Training

The HSE has highlighted a lack of training to employees ranging from Radiation Protection Supervisors (RPSs) to ancillary and medical staff, particularly new starters. RPC's own experience of training theatre staff is that many of them are unaware of the local rules, so as a starting point ensure all staff working in Controlled Areas sign to say they have read the local rules and have undertaken basic radiation safety training. RPC can assist with provision of such training where requested.

IV. Local Rules

The HSE are concerned that many local rules are too long. If your local rules have been prepared by RPC, this shouldn't be a problem for you as we ensure that local rules contain only the key working instructions for the area to which they pertain.

V. Role of the RPS

Finally some good news for overworked RPSs. The HSE points out that the one duty of the RPS under IRR99 is supervising the local rules and that often the RPS is burdened with extra duties that should rest with the Head of Department. No comfort though, if you are both RPS and Head of Department.

For more information see the full article in HSE's online Radiation Protection News at <http://www.hse.gov.uk/radiation/rpnews/index.htm>

New Exemption Regime for Radioactive Substances

The Environmental Permitting (England & Wales) (Amendment) Regulations 2011 came in to force on 1st October 2011. The amendment to EPR2010 sets out practices involving small amounts of radioactive substances that can be carried out without a permit from the Environment Agency. The amendment revokes the Exemption Orders (made under RSA93) and issues a new Schedule 23 to EPR2010. Overall the exemption regime is similar to that under the previous Exemption Orders. However, there are more general categories for permit-exempt activities and guidance has been published on the following areas:

- Small sealed sources
- Waste sealed sources
- Uranium and thorium
- Very low level waste
- Small amounts of open radioactive sources
- Medical and veterinary uses of radioactive sources

The key changes that may be of interest to readers of RPC News are as follows:

1. Users of radioactive substances for medical or veterinary diagnosis or treatment can now dispose of up to 10 GBq Tc-99m aqueous waste per year through patient excreta (< 5GBq p.a. for other isotopes) and 100 MBq aqueous waste per month through non excreta. This exemption may be useful for private hospitals who have patients return from radioisotope investigations performed in the NHS and who subsequently send radioactive waste via their urine and faeces to the receiving hospital's sewer.

2. It is possible to hold sealed sources of up to 4 MBq under exemption provided the maximum total activity of such sources remains below 200 MBq. This generally allows calibration sources such as those for gamma probes used for sentinel node localisation procedures (typically 3.7 MBq Co-57) to be held without a licence.
3. Waste sealed sources can be stored for up to 26 weeks (or longer if the regulator agrees) and there are no limits on total number of waste sources held at one time or disposed in a year
4. Very low level waste (VLLW) is now exempt rather than permitted. Waste may be disposed of to landfill or incineration provided no single item exceeds 40 kBq and there is a maximum of 400 kBq per 0.1m³ waste. Ten times these limits are allowed for H-3 and C-14. No time limit for holding VLLW is specified in the EPR2010 amendment although a maximum of two weeks is strongly advised in the guidance.

Users should bear in mind that the term "exemption" means exempt from the requirement to hold a permit from the Environment Agency and **not** exempt from regulation. However, the following are completely out of the scope of regulation:

- Radioisotopes with a half-life of less than 100 seconds
- K-40
- Substances with an activity less than occurs in nature
- Substances that are radioactive purely on the basis of contamination (e.g. cyclotron)

Please contact RPC for further information or if you are uncertain whether an application to the EA for a permit is needed for your current use of radioactive substances.

RPC Offers Testing Service for Personnel Protective Equipment

Many of you will be aware of the strict legal requirements for ensuring X-ray equipment is adequately tested before first being put into clinical use in order to ensure the safety of staff and patients. However, our experience indicates that lead aprons and other protective equipment worn on the body to shield the operator from scattered and primary radiation are often purchased and put directly into service without any prior testing. Whilst the manufacturer will normally display the lead equivalence on each item, research shows that there is a wide variation in the true level of protection between different manufacturers. In some cases personnel protective equipment does not meet the specification claimed by the supplier. Although users can examine each item to look for areas of weakness, RPC recommends that consideration be given to confirming that the lead equivalence of aprons, gonad protectors and thyroid shields meets the stated specification. In response to the large number of enquiries we have received on this matter, our John Perry Laboratory has developed a service for independently determining the lead equivalence of protective devices across a wide range of energies used in diagnostic radiology. Our tests are performed in accordance with the BS EN 61331-1:2002 standard 'Protective Devices Against Diagnostic Medical X-Radiation – Method for determination of attenuation properties of sheet materials' and can be used for independent verification of new personnel protective equipment before it is put into service or as a check on the performance of older devices, especially those suspected of being damaged. Please contract John Kyriou (tel: 020 8725 1053, john.kyriou@stgeorges.nhs.uk) at RPC for further details of the service.