

**RADIATION PROTECTION
POLICY AND PROCEDURES
NUMBER : 5**

PERSONAL DOSE MONITORING

P&P 5 Summary

Personal dosimeter are worn or not worn as determined by the relevant RPS.

Trust staff are not classified as Radiation Workers and therefore direct monitoring is not compulsory. However, in order to monitor the effectiveness of local rules and systems of work, and to help ensure that the annual dose received is less than $\frac{3}{10}$ th of any dose limit, personal dosimeters are issued to selected members of staff. The doses recorded by these dosimeters are assessed regularly by the departmental Radiation Protection Supervisor and the Radiation Protection Adviser.

It is expected that all staff will endeavour to minimise any radiation exposure. Most staff working in controlled areas will therefore wear a dosimeter as directed by Radiation Protection Supervisor.

Diagnostic Radiology

In the case of fluoroscopic work where a lead-rubber protective apron is worn, many years of monitoring locally has shown that for most employees the dose measured by a dosimeter under the apron is so low as to be virtually indistinguishable from background radiation. Therefore, it has been agreed that, for persons working regularly in fluoroscopy, the dosimeter should be worn outside the apron at shoulder height, so assessing the dose received by those parts of the body not protected by the apron. As a rule of thumb, the effective dose to those wearing over-apron dosimeters in fluoroscopy is approximately one tenth of the dosimeter reading¹.

In addition, staff who may approach $\frac{3}{10}$ th of the dose limit are monitored with two dosimeters, one over-apron and, a second dosimeter under-apron. The whole body dose can then be estimated

¹ Based on assuming 5% transmission of 90 kVp by 0.35 mm lead

using the method described by Niklason et al², or other methods recommended by the radiation protection adviser (RPA). If appropriate, extremity monitors are also worn.

Pregnant staff working in fluoroscopy will generally also wear an under-apron dosimeter at waist level in addition to an over-apron dosimeter. The fetal dose will be approximately half the under-apron dose, and should not exceed 1 mSv.

Radioactive Substances

Where radioactive substances are handled, either directly or using suitable handling tools, extremity monitors are worn, as directed by the appropriate Radiation Protection Supervisor.

Employees Responsibility

The HSE has stated³ that "employees who persistently fail to wear, look after or return their dosimeters promptly are liable to enforcement action by inspectors up to and including prosecution under Section 7 of the HSW Act 1974."

Changes from Issue No.two (2/7/96)

Reference to fetal monitoring

Over/under apron guidance clarified

² The Estimation of Occupational Effective Dose on Diagnostic Radiology with Two Dosimeters, Loren T. Niklason, M. Victoria Marx, and Heang-Ping Chan, Health Physics, vol. 67, no. 6, December 1994, p611-615
⇒ whole body dose $\cong 0.06 \times (\text{over-apron dose} - \text{under-apron dose}) + \text{under-apron dose}$

³ Radiation Protection News, Issue 20 November 2001, HSE