

**RADIATION PROTECTION  
POLICY AND PROCEDURES  
NUMBER : 7**

**STAFF PREGNANCY & BREASTFEEDING**

**Background**

Staff working with X-ray equipment and radioactive substances are naturally concerned to minimise any risk to a foetus should they become pregnant. The Ionising Radiations Regulations 1999 (IRR99) specifically identify the need for adequate information, placing an onus on the employer to provide information and on the employee to report a pregnancy.

**Legal Requirements**

The employer must

- in relation to pregnant employees, ensure that the dose to the foetus is unlikely to exceed 1 mSv (milli-sievert) after they are notified of the pregnancy
- in relation to breastfeeding employees who work with radioactive substances, ensure that the conditions of exposure are restricted so as to prevent significant bodily contamination of that employee
- notify female employees working with ionising radiation of the possible risks to a foetus from radiation, and the importance of informing the employer in writing as soon as possible after they become pregnant
- notify female employees working with radioactive substances of the possible risks to a nursing infant from contamination, and the importance of informing the employer in writing if they are breastfeeding.

**Doses and Risk to the Foetus**

The current legal limit of dose to the foetus, from the time pregnancy is declared to term is 1 mSv, which corresponds to a dose to the woman's abdomen of around 2 mSv. If we assume eight months of declared pregnancy, the dose must be kept below an average of 250 uSv (micro-sieverts) per month for that eight month period.

Personal monitoring over many years has shown that this level is well below the dose received by virtually all staff, providing that the Local Rules are followed.

It should be noted that the “dose limits” do not imply that exposures above these limits will necessarily cause any harm. Severe effect (such as malformation or foetal death) only occur if the foetus is exposed to hundreds of milli-sieverts in a short period of time. Smaller doses of radiation can increase the risk of childhood cancer by a small amount. The natural risk of fatal childhood cancer is 1 in 1,300. The risk of radiation induced childhood cancer from 1 mSv is around 1 in 17,000, more than ten times less than the natural risk.

### **Personal Monitoring in Fluoroscopy and Interventional Radiology**

In fluoroscopy, where a personal dose monitor is worn over the apron, an over-apron dose of 3,400 uSv per month over 8 months corresponds to a whole body dose of around 2 mSv. It should be noted that a lead rubber apron will fully cover the abdomen, and that the dose to the foetus will be certainly be less than 1 mSv if the monthly over-apron dose is less than 3,400 uSv.

A pregnant woman working in fluoroscopy should normally be issued with a second personal dosimeter ("*baby's badge*") to be worn at waist height under their lead apron.

### **Conclusions**

- Staff working with x-rays or radioactive materials should inform their Radiation Protection Supervisor (RPS) as soon as they learn that they are pregnant.
- In almost all circumstances, there are no grounds for amending staff working practice during pregnancy.
- The RPS should, however, consider whether changes are necessary in working practice, on the basis of previous personal dose badge results.
- If there are any questions or doubts, then contact the Radiation Protection Adviser (tel. 01482 676702).

#### **Changes from Issue No. 1/95**

*Updated to reflect change from IRR85 to IRR99*