Dosimetric Monitoring of Radiation Workers

Radiation Workers

Classified Workers
As an employer of Radiation Workers, the University is required to designate as “Classified” any employee who is likely to receive a dose of ionising radiation which exceeds three-tenths of the relevant dose limit. No employee under the age of 18 may be designated as a Classified Radiation Worker. If an RPS wishes to designate a worker as “Classified”, they should ensure that both the appropriate RPO, and the Appointed Doctor are informed of the reasons.

Any employee of the University who needs to be designated as a Classified Radiation Worker must, under the conditions of IRR99, undergo a medical examination, and be certified as fit, both before commencing work and annually thereafter. Medical surveillance will be provided by the Appointed Doctor, who will maintain a confidential health record for each Classified worker. This record will be kept for monitoring effects of radiation only. Any medical problems suspected to arise from the use of ionising radiations should be referred to the University Occupational Health Service. A further medical examination will be required on ceasing work with ionising radiations or on leaving the University.

When a Classified Worker changes employment the pre-employment medical examination need not be carried out if the person has been previously certified as fit within the last 12 months and their previous certification is made available for their new health record. The University is required to retain the health record of each Classified Worker for fifty years from the date of the last entry.

Non-classified workers
Employees who, as a result of their work activities, are unlikely to receive a dose of ionising radiation which exceeds three-tenths of the relevant dose limit, but may receive a dose exceeding one-tenth, should be registered with the University’s approved Dosimetry Service as Non-Classified radiation workers. Most radiation workers
registered in the University, including all those under the age of 18, will fall within this category.

**Female Employees**
Dose limits for the abdomen of women of reproductive capacity are intended to protect the foetus, which is particularly sensitive to ionising radiations. Radiation workers who become pregnant should inform their employer, in writing, as soon as possible so that advice may be given. Where necessary, steps will be taken to ensure that working conditions allow compliance with the special dose limits which will apply for the duration of the pregnancy.

**Procedure in case of Accidental over exposure**
If an accident or any other incident occurs which is likely to result in a person being exposed to ionising radiation in excess of three-tenths of the relevant dose limit, it will be necessary to arrange for an immediate dose assessment. This may involve examination of the dosimeter, or by other means, such as examination of biological specimens or computation of dose received from measurements of dose rates, contamination levels, exposure time and distance etc. The circumstances leading to the accident will have to be fully investigated so that appropriate action can be taken both to deal with the current situation and to prevent future occurrences.

**Personal Dosimetry**

**Classified Workers**
Classified Radiation Workers are required by law to have their radiation doses monitored. For those exposed to external radiation fields this will normally be with personal dosimeters such as whole-body dose monitors and/or extremity monitors (e.g. film badges or thermoluminescent dosimeters (TLDs)). Where the use of personal dosimeters is inappropriate (e.g. when working with low energy beta emitters), an assessment of dose will be made by other methods such as environmental or biological monitoring. If a TLD issued to a Classified Worker becomes lost or damaged, an investigation to estimate the actual dose received during the monitoring period will be required. In the absence of sufficient information a dose pro-rata to the annual dose limit will be recorded.

**Non-Classified Workers**
Personal dosimeters may be issued to non-classified Radiation Workers (particularly new workers) to demonstrate that classification is not required, by monitoring both the technique and the working environment. Such monitoring will not necessarily need to be continued once an adequate estimate of the risks has been obtained.

A whole-body TLD will normally be issued to any worker regularly handling 40 MBq or more of a gamma, or high-energy beta emitter; a ring-form TLD may be issued to a non-classified worker who regularly manipulates more than 1 MBq of concentrated high energy beta emitters such as 32P.
Use and care of Personal Dosimeters

The university's Approved Dosimetry provider, Christie Medical Physics and Engineering, issues appropriate dosimeters (i.e. TLDs) to record the radiation dose received by the wearer. Such monitoring ensures that Radiation Workers do not exceed the relevant dose limits and that all exposures received are as low as reasonably achievable (ALARA).

When issued for work with radioactive materials or with equipment producing ionising radiation such as X-rays, a dosimeter must be worn correctly, treated carefully and not interfered with. In particular, care must be taken to ensure that it is not inadvertently exposed by being left adjacent to a source of ionising radiation when not being worn; any such accidental exposure must be reported to the RPS. Dosimeters must always be correctly positioned in the holder provided and must be removed from laboratory coats before these are laundered. They must also be kept well away from sharp items, direct heat, and luminous watch dials..

*The RPS should deal with the provision of dosimeters within his/her School.* The RPO will give advice as required. However, there is little point in providing dosimeters for workers in areas where only low energy beta emitters (e.g. tritium) are handled.

Personal dosimeters are generally changed at 4-weekly intervals. *All dosimeters must be returned promptly to the dosimetry supplier (usually via the area RPS) at the end of each 4 week period.*

Dosimetry Records

Under IRR99, records of radiation doses received by Classified Workers must be kept for 50 years from the date of the last entry. Records of dose assessments made following an accident or other incident (i.e. even one involving a non-classified worker”) must also be kept for 50 years. Classified Workers will be sent a copy of their termination dose record on ceasing employment with the University. The Personal Monitoring Registration form shown below is a copy of the form required by North West Medical Physics at Christie Hospital, for registering workers who are using TLD’s.

Biological Monitoring

Biological monitoring involves measuring radioactivity in blood or urine samples, to calculate the residual activity in the body. It is normally necessary only if very large activities of unsealed sources are being handled, and if a Risk Assessment indicates a significant risk of radionuclide intake, excessive skin contamination, or foreseeable accident. Note, however, that users of *radioiodine* should regularly monitor their thyroid gland to check for possible intake of vaporised iodine. For details of the approved procedure, please contact the site RPA. In all cases of accidental intake and/or contamination, both the RPS and the RPA must be notified immediately as it may be possible to enhance the rate of elimination from the body.
CHRISTIE MEDICAL PHYSICS & ENGINEERING - MONITORING REGISTRATION FORM

Please complete clearly in full and return to: The Personal Radiation Dosimetry Service
Christie Medical Physics & Engineering
The Christie NHS Foundation Trust
Withington
Manchester M20 4BX
Tel: 0161 446 3972 (or Fax: 0161 446 3545)

SURNAME (family/last name): ...........................................................
(Dr/Mr/Mrs/Miss/Other – please select)

FIRST NAME(S): ..................................................................................................

MAIDEN NAME (if applicable): .........................................................................

DATE OF BIRTH: ..................................................................................

DEPARTMENT: ..........................................................................................

WORKPLACE ADDRESS: ..................................................................................

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..........................................................................................................................
..........................................................................................................................

OCCUPATION: ..........................................................................................

COMMENCING DATE: ..................................................................................

SELECT BADGE TYPE REQUIRED:

Body badge: ☐

Eye badge: ☐

Foot badge: ☐

Left Ring: ☐

Right Ring: ☐

Left EXTRAD FS: ☐

Right EXTRAD FS: ☐
To be completed if a ‘spare’ badge has been allocated:  

Date of Issue: ..................

Dosemeter ID: ..................

To be completed if you are returning to work after a period of absence or if you have been previously monitored by The Christie at another location:

1. The dates: ......................................................................................................

2. Under what name: ........................................................................................

3. Establishment: ...........................................................................................

PLEASE NOTE: Dosemeters are very expensive and MUST be returned to your Department on leaving. Your Department will be charged for any that are not returned.

Data Protection Act 1998

The Personal Radiation Dosimetry Service keeps the above data on file along with subsequent dose information. This information will only be used for the purposes of monitoring radiation dose received during employment and will only be provided to your employer, either as part of a routine report (e.g. a monitoring period report or as part of an annual summary) or on request from your employer.

Jan 2013

The Christie NHS Foundation Trust