NATIONAL CENTRE FOR RADIATION SCIENCE

PERSONAL DOSIMETRY SERVICE

monitoring personal radiation levels in the workplace

www.esr.cri.nz
Personal radiation monitoring services for workplace health and safety

The effects of ionising radiation exposure on the human body are cumulative. Monitoring individual exposure to workplace radiation can confirm that doses are low and recommended dose limits are not exceeded.

ESR’s Personal Dosimetry Service offers employers a convenient means to measure and record the radiation doses employees accumulate at work. The service offers flexibility in monitoring options.

ESR supports its monitoring service with specialist technical knowledge and experience gained through its long experience and broad range of radiation safety activities. The service has a 60 year history of operation and is the only service of its kind based entirely in New Zealand.

Personal monitoring options

ESR has two personal dosemeters for monitoring different parts of the body. The PB15T monitor is suitable for measuring doses to the trunk, limbs, and lens of the eye (or collar) and the ring monitor is suited to measuring doses to the fingers and hands.

Both dosemeter types were designed for ease of use, sensitivity, and simplicity in dose assessment.
**PB15T monitor**
The PB15T monitor attaches easily to the outside of clothing on the trunk, collar, wrist or ankle. The badge has an integrated clip and a range of other attachment options may be used. The monitor is labelled with the wearer’s name, wearing position and wearing period. This monitor is a universal body monitor and is suitable for all areas of the body except hands and fingers. Monitoring of the hand and fingers is best undertaken by a ring dosemeter.

**Ring monitor**
The ring monitor fits any sized finger and comes in four colours (indicating month of issue). It has an easy to read identification number.

**ESR’s dosemeter technology**
Both dosemeters contain discs of thermoluminescent, tissue-equivalent material. The discs store the radiation energy they absorb so that it can be measured later in the laboratory.

**Measurement results**
Results reveal not just whether exposure has occurred, but how much. The units and quantities used for reporting are consistent with international guidance and can be compared safely with limit quantities set in legislation and recommended by international radiation safety bodies.

**Get the right monitoring for your needs**
As well as monitoring, analysis, reporting and record keeping, ESR can provide advice on the right monitoring strategy for any situation and on the interpretation of your results.
Technical specifications

| Radiation type and energy | Photon radiation between 15 keV and 3 MeV  
Beta radiation above 0.8 MeV |
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<tbody>
<tr>
<td>Maximum recommended wearing period</td>
<td>Three months</td>
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<tr>
<td>Reporting quantities</td>
<td>Personal dose equivalent at depths of 10 or 0.07mm, Hp(10) and Hp(0.07) respectively, as defined by the International Commission on Radiation Units in report ICRU 51</td>
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<tr>
<td>Reporting unit</td>
<td>Millisievert, mSv</td>
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<td>Reporting resolutions</td>
<td>0.01 mSv for Hp(10) and 0.1 mSv for Hp(0.07) respectively for doses under 1 mSv, and 2 significant figures thereafter</td>
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<td>Dosemeter issue</td>
<td>Dosemeters are issued for one, two, or three months as required. They are delivered automatically at the start of the agreed period.</td>
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<td>Reporting</td>
<td>Doses reported using Hp(0.07) may be compared numerically with equivalent dose limits set for the skin (500 mSv in any one year), and Hp(10) for dosemeters worn at suitable locations on the body, may be compared with equivalent dose limits set for the extremities (500 mSv per year) and the effective dose limit (20 mSv per year). In most exposure situations where separate eye monitoring is used, this is also true when comparing Hp(10) with the equivalent dose limit for the lens of the eye (150 mSv per year)</td>
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