

## Personnel Radiation Monitoring Services (FAQ)

<b>1</b>	<b>What is TLD and what is a TLD badge?</b>
<b>Ans</b>	<p>Thermoluminescent (TL) means emitting light when heated. We can briefly describe the mechanism of TL as follow:</p> <p>When a strong energy source (such as ionizing radiation) hits a TL material, electrons are freed from some atoms and moved to other parts of the material, leaving behind "holes" of positive charge. Subsequently when the TL material is heated, the electrons and the "holes" re-combine, and release the extra energy in the form of light. The light intensity can be measured, and related to the amount of energy initially absorbed through exposure to the energy source.</p> <p>TLD badges are used to detect radiation at levels that can be harmful to humans. They emit light in amounts proportional to the radiation received. Thermoluminescent dosimeters (TLDs) are made from materials that measure cumulative exposure to ionizing radiation. They are worn for periods of approximately three months and are then processed to determine the dosage of radiation detected. TLD badges are logged to maintain cumulative records of an individual's exposure to radiation over an extended period of time.</p>
<b>2</b>	<b>What is meant by Personnel Monitoring Service?</b>
<b>Ans</b>	<p>The term Personnel monitoring means, monitoring of the radiation workers with respect to absorbed dose in the body while working in the radiation field.</p>
<b>3</b>	<b>Why Personnel monitoring is required?</b>
<b>Ans</b>	<p>To obtain an assessment of the effective dose and where appropriate, the equivalent dose in significantly exposed tissues, so as to demonstrate compliance with managerial regulatory requirements.</p> <p>To contribute to the control of operation &amp; design of facilities.</p> <p>In case of accidental overexposure, to provide valuable information for the support of appropriate health treatment.</p>
<b>4</b>	<b>How to start Personnel Radiation Monitoring Service (PMS)</b>
<b>Ans</b>	<p>There is two forms, ( PMS-1 ) and other is ( PDF-2 )</p> <p>(PMS-1 ) form for registration of Centre &amp; form for registration of radiation personnel under the Centre. To start Personnal Radiation Monitoring Service PMS, first download the ( <b>PMS-1</b> ) &amp; ( <b>PDF-2</b> ) forms.</p> <p>For ( <b>PMS-1</b> ) form,fill all details of your Centre such as e-LORA Institution Registration Number, name &amp; address, phone number, pin code, email address. Fill in details of radiation installation such as make, model, radio-isotope, activity, installation, and in the end kindly affix stamp of your centre &amp; signature of Head of centre.</p> <p>For ( <b>PD-2</b> ) form fill all detail of radiation personnel such as name of address of present organization where he/she is working, full name of radiation personnel, Date of birth, birthplace, qualification, nature of work of radiation personnel. Make sure that on the form, the radiation workers signature along with details and signature of Radiation Safety Officer&amp; Head of the institution are done.</p> <p>Kindly note that incomplete forms will be rejected.</p> <p>Also attach photos and zerox copy of photo ID for each form.</p>

	<p>Depending on the number of Radiation personnel to be monitored, attach a AT PAR cheque or Demand draft in favour of Ultra-Tech Laboratories Pvt. Ltd. Payable at Bhilai or you can visit our website and click on "Pay Now" button for online payment options. Please visit (charges to pay) section of this web site for calculation of charges.</p> <p>Your payment amount includes charges for one control card which will be sent to you every time along with your personnel TLD cards. Control measures the background radiation of your Centre.</p> <p>Dispatch all the forms duly completed with photos and Xerox copy of ID proof.</p> <p>As soon as we receive the application forms, we will dispatch them to BARC for approvals which normally take 15-20 working days.</p> <p>As soon as BARC approval for your Centre and radiation personnel is received, we will start their Personnel Radiation Monitoring Service by dispatching the TLD Badges by Courier or Postal Registered Post as applicable.</p> <p>Make sure to please read the User Instruction Manual (accompanied by TLD badges) and inform &amp; train your radiation personnel regarding the step and procedures for using the TLD badges. (A copy of User instruction Manual can be downloaded along with the TLD application forms)</p>
<b>6</b>	<b>When will we get new service period cards after starting PMS?</b>
<b>Ans</b>	Normally the TLD cards for use during a particular period will be sent in advance so as to reach the user institution during the last week of preceding month. In case the TLD cards are not received within 5 days of the commencement of the service period or there is any discrepancy in the receipt of the materials, the same should be intimated to us immediately.
<b>8</b>	<b>Why is control card along with the personnel card required?</b>
<b>Ans</b>	We are basically concerned about the Personnel Monitoring service i.e. the dose absorbed by the radiation personnel while working in the radiation field. As you are aware, there is some radiation which is occurring naturally & which contributes to both general public & radiation worker. A TLD card can not differentiate between radiation field's radiation & natural background radiation. Hence, to find the contribution of radiation field's radiation in the absorbed dose by radiation worker, contribution due to the natural background has to be subtracted. Therefore, a control card is required to note down the contribution due to the natural background.
<b>9</b>	<b>How to wear the TLD Badges?</b>
<b>Ans</b>	The TLD badge should be worn on the body trunk with the name label facing towards outwards i.e. the side with sliding window should face towards yourself for properly measuring the radiation dose absorbed by you. We recommend you to wear the TLD Badge under the lead apron for estimating the dose of the major part of your body.
<b>10</b>	<b>How to return the TLD badges after use?</b>
<b>Ans</b>	You can return TLD cards by registered post or courier in plastic box and in cloth laid envelope. Please note that the user will be responsible to any loss of the TLD cards in transit.

<b>11</b>	<b>Where to store the TLD badges after daily use?</b>					
<b>Ans</b>	The user should store their TLD badges away from the <b>RADIATION AREA</b> after work. We recommend users to keep their own TLD badges in a secure place under lock and key away from <b>RADIATION AREA</b>					
<b>12</b>	<b>Can we use the TLD badge of person who has left for a new person?</b>					
<b>Ans</b>	No, the person who has left your institution has to return his TLD holder and holder back to us along with the letter for cancellation. and for new person you have to send us a duly filled in PD-2 form for BARC approval. After receiving approval from BARC we can start his service.					
<b>13</b>	<b>Can I use the same TLD badge for two or more different Radiation Installations?</b>					
<b>Ans</b>	No, you have to apply for different TLD badge for two or more different Installations.					
<b>14</b>	<b>What can I do if my TLD badges is lost?</b>					
<b>Ans</b>	The users should report to us in writing by mail or email immediately mentioning the service period for which the TLD badges is lost. Also it should be clearly mention whether the card or holder or both the card and holder has been lost. The same will charged accordingly.					
<b>15</b>	<b>What is the whole body dose &amp; extremity dose?</b>					
<b>Ans</b>	Exposure to radiation can be either to the whole body (uniform irradiation) or to individual organs of the body (non uniform irradiation). Radio sensitivity of different tissues in human body is different. Also, the effect of radiation exposure of individual tissues contributes differently to the total health of the exposed person. A chest TLD badge can take care of the whole body dose as while working maximum exposed portion of body is upper half portion of the body. The extremity portion of our body is our hands as they can move away from the body & hence to measure the extremity dose, a wrist badge can be used.					
<b>16</b>	<b>What are the dose limits for occupational radiation worker, pregnant radiation worker &amp; general public?</b>					
<b>Ans</b>	Dose limits Recommended by ICRP (I.C.R.P. 60 – 1990)					
	<table border="1"> <tr> <td rowspan="2"><b>Application</b></td> <td colspan="2"><b>Dose limit</b></td> </tr> <tr> <td><b>Occupational</b></td> <td><b>General public</b></td> </tr> </table>	<b>Application</b>	<b>Dose limit</b>		<b>Occupational</b>	<b>General public</b>
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Whole body: (Effective Dose)	20mSv per year, averaged over defined period of 5 years, with no more than 50mSv in a single year. (30mSv only as per AERB (India)directive.	1mSv in a year, averaged over 5 years
Parts of the body: (equivalent dose) Lens of the eye Skin Hands & Feet	150mSv per year 500msv per year 500msv per year	15mSv in a year 50mSv in a year

The basis for the control of occupational exposure of women who are not pregnant is the same as that for men & the commission recommends no special dose limits for women in general. However, once pregnancy is declared, the Foetus should be protected by applying a supplementary equivalent dose limit of 2mSv, to the surface of the women's abdomen (lower trunk) for the entire period of pregnancy and by limiting the intakes of radionuclide to about 1/20 of ALI ( Annual Limits on intake), since the Foetus is considered as a member of general public.

<b>17</b>	<b>Where is the badge used in case of use of any protectionary measures such as lead apron?</b>
<b>Ans</b>	In case of use of lead apron, the badge should be worn inside the lead apron on chest level as the absorbed dose has to be estimated after the use of protectionary measures.
<b>18</b>	<b>How to access the monthly/Quarter dose report?</b>
<b>Ans</b>	We send the hard copy of dose report to the contact person of a company with the new batch of dosimeters every month /Quarter. Also the soft copy of the dose reports are sent by email to the contact person and Five Yearly dose report are sent by National Occupational Dose Registry Group (NODRS), Radiological Physics and Advisory Division ( RPAD ), BARC, Mumbai.
<b>19</b>	<b>Is it compulsory to use TLD card even when the reported dose value is zero?</b>
<b>Ans</b>	Yes, because reported dose value is zero that does not mean readings detected from the TLD card is zero. Instead that means dose estimated is below the reporting value for X ray ( X ) < 0.05mSv, for beta ( β ) < 0.5mSv & for Gamma ( γ ) < 0.10mSv which are mentioned in the dose report. Also, to meet the requirements of the Personnel monitoring service (as mentioned earlier) it is compulsory to use TLD cards.
<b>20</b>	<b>What is meant by over exposure?</b>
<b>Ans</b>	Over exposure means the radiation personnel is exposed to more exposure than the normal exposure. Some dose constraints have been put by Bhabha Atomic Research Centre ( BARC ), Mumbai & Atomic Energy Regulatory Board ( AERB ) Mumbai, the absorbed dose beyond that is considered to be the over exposure. The limit for over exposure for whole body is 10mSv (for the X ray & Gamma radiation) & for the extremity is

	250mSv in a single service period. The over exposure is shown as *** in the Dose Report for that particular service period.
<b>21</b>	<b>What exactly am I paying for my Annual TLD Badge service charges?</b>
<b>Ans</b>	Charges include all activities associated with determining a personnel/area's exposure to radiation. This includes the use of a TLD badge, all shipping to send the badge to you, all activities associated with producing and delivering a dose report to you in a timely fashion. The service charges <b>does not</b> purchase of TLD badge itself. It remains the property of Ultra-Tech Laboratories Pvt ltd. Bhilai and failure to return the badge to us in a timely manner may result in a Lost Badge Charge.
<b>22</b>	<b>Is on-call service available in the case of an emergency?</b>
<b>Ans</b>	Between the hours 10:00am to 5pm, Monday to Saturday