Principles of operation of the IAEA/WHO TLD postal dose audit service for radiotherapy centres

- This service is offered to IAEA Member States that are eligible to receive Technical Cooperation support from the IAEA. It is also offered to WHO Member States upon WHO’s request. The service is not routinely offered to Member States that have a national dosimetry audit network for radiotherapy.

- The service is cost free to participants. It spot checks the calibration of clinical teletherapy photon beams (Co-60 and megavoltage beams from accelerators). It does not check electron beams, brachytherapy or orthovoltage x ray beams.

- A hospital can request the number of TLD sets corresponding to the number of clinical photon beams used for teletherapy; however, not more than three beams will be checked in an irradiation run (irradiation window).

- The IAEA/WHO TLD service is organized in 10 irradiation runs per year. Over a period of two years, each participant is included in one of these irradiation runs.

- Your institution is now being contacted to discuss your participation in this irradiation run. Only those institutions that agree on the terms and conditions of the IAEA/WHO postal dose audit service, as outlined in this note, will be provided with the TLDs.

- At the same time as the participants, the IAEA Dosimetry Laboratory irradiates reference TLDs (2 Gy, Co-60 beam) for every beam in participating hospitals. It’s therefore important that the participants keep to the fixed irradiation window.

- In each irradiation run, two reference institutions, such as a Primary Standards Dosimetry Laboratory and a leading radiotherapy centre, irradiate TLDs with well-defined doses to provide proper quality control of the process.

- The TLDs irradiated by participants should arrive at the IAEA laboratory not later than 6 weeks after irradiation, otherwise the hospitals will have to wait for their results due to queues for the TLD reader arising from irregular return of TLDs.

- If an individual participant cannot irradiate the TLDs in the scheduled time window, he/she can still do this later. The "late" TLDs will be evaluated individually at a later date. The IAEA should be informed when the "late" participant intends to make the irradiation in order to prepare the reference TLDs.

- The TLD results are sent to the participants within 8 weeks of receiving the irradiated TLDs at the IAEA, depending on the queue for the TLD reader. The participants receive individual result certificates for each beam checked with TLDs. Results within a 5% limit are considered acceptable.

- If the results are within the acceptance limit of 5%, the next participation is recommended after two years.

- Institutions with results outside the 5% acceptance limit are provided with a second, follow-up TLD for immediate repeat irradiation. If the second TLD result is still not acceptable, an expert visit is recommended to resolve the discrepancy, and the next participation is recommended for one year later.

- The results of TLD audits are kept confidential by the IAEA/WHO (PAHO) staff and the national TLD coordinators, where existing, and will not otherwise be disseminated without the written permission of the participating radiotherapy centre.

- The TLD material sent to your institution represents a significant investment in cost, time and effort to the IAEA/WHO. Failure to return TLDs may be reported to your local authorities or to the Ministry of Health.

- Individual requests (outside the irradiation windows) are accepted for new installations, following major repair of the treatment units, Co-60 source replacements, unusual patient skin reactions, and for other important reasons. Such requests can be made at any time and will be given the highest priority.