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KFDA Postal Dose Audit System

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KFDA has performed the calibration for therapy level dosimeters with Co-60 gamma rays since 1979 as a SSDL in Korea. The calibration coefficients of KFDA for the air kerma and absorbed dose to water have the traceability with KRISS and BIPM respectively. Since 1999, a national dosimetric quality audit program for high-energy photon beams and Co-60 gamma ray beams has been performed annually by KFDA for the radiotherapy centers in Korea. Thermo-luminescent Dosimeters are used for the postal audit service. TL material is the Lithium Fluoride powder. PCL 3 automatic reader is used in the determination of the absorbed dose to water irradiated to the TLDs. It is the same model installed in the dosimetry laboratory of IAEA and EQUAL. Three dosimeters are used to measure the output of one beam quality. The standard deviation of the mean for one dosimeter is about 0.8 %. The correction factors for photon energy, TLD holder and non-linearity dose response are applied to the dose determination. The uncertainty associated with the dose determination for high-energy photon is 1.6 % ($k=1$). The participating centers are requested to irradiate the TLDs to the absorbed dose to water of 2 Gy at the reference condition. Agreement between a stated dose by a participant and a measured dose by KFDA within ± 5 % is considered acceptable. The audit program will be extended to include high-energy electron beams check in 2006.

Key words: quality audit, TLD, radiotherapy