

results in which errors were almost within 1%. The standard deviation of outputs between glass dosimeter and ion chamber was about 1.2 % (N=180).

The value, 1.2 %, is sufficient enough to check the radiation output because the error will easily become less than 1 % by using multiple elements. We are now acting to start the postal survey check in Japan facilities using glass dosimeter system. In future, this system could be expanded from Japan to Asian countries.

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Calibration System for Therapy-level Dosimeter in Japan

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1. Traceability. National Institute of Advanced Industrial Science and Technology (AIST, the PSDL in Japan) delivers the standards of radiation dose to several SSDL and other institutions which work as dosimeter calibration center. Until 2003, dosimeters used in radiation therapy were calibrated by Dose Standard Center for Medical Treatment (DSC) that was organized by Japan Radiological Society. DSC was placed in 13 districts in whole area of Japan. The reference dosimeters of DSC were calibrated by the comparison with the secondary standard dosimeter owned by National Institute of Radiological Sciences (NIRS) which was one of the SSDL in Japan. Dosimeters used at users' sites should be traceable to the primary standard. However, steps to transfer the standard increase the uncertainty of the measurement at the user's site. In 2004, Association for Nuclear Technology in Medicine (ANTM) started a new calibration system for therapy-level dosimeter while DSC stopped calibration work. ANTM acts as a SSDL and calibrates dosimeters used in clinical institutions in whole Japan. It is expected that the uncertainty accompanying with standard transfer steps would be reduced.

2. Calibration of dosimeter by ANTM. Devices used in dosimeter calibration by ANTM are ⁶⁰Co irradiation unit and measuring instruments which were used in NIRS when NIRS worked as SSDL. These devices will be used in postal quality audit system which is planned to start in next year under the cooperation of NIRS and ANTM. The total number of dosimeters calibrated by ANTM from April/'04 to March/'05 was 564, and the total of ionization chambers was 1,188. 815 chambers had been calibrated before the calibration by ANTM. The interval of calibration was less than 2 years for about 80% of these chambers and the average of ratios of calibration factor was about 1.0. Japanese standard dosimetry protocol recommends that the frequency of chamber calibration should be once a year. It is expected that the number of calibration will increase in the future.