Improvement of the Calibration Technique of Clinical Dosemeters By Components*

Linda V. E. Caldas, Maria da Penha P. Albuquerque and
Marcos Xavier
Instituto de Pesquisas Energeticas e Nucleares
IPEN-CNEN, São Paulo, Brazil

Constituted by ionization chambers (thimble and superficial types) connected to special electrometers, the clinical dosemeters are normally calibrated in gamma and X-radiation fields as whole systems in relation to secondary standards, at the Calibration Laboratory of IPEN. In order to allow the users to send only one of the pieces for recalibration, a very useful procedure for those who own several ionization chambers and only one electrometer (as is very common), a technique of calibration by components was developed in the present work. Two different systems were used: a standard capacitor of 1000 pF (General Radio Company, EUA) and a special standard current source, consisting of an ionization chamber with a ^{90}Sr source (Physikalisch-Technische Werkstätten, RFA). The results obtained with these two methods showed a difference lower than 0.4%. In relation to the usual total calibration method, the differences in calibration factors were lower then 0.7% for several clinical dosemeters tested.

* Partially supported by the International Atomic Energy Agency