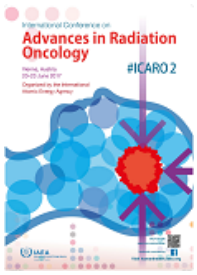

Contribution ID: **9** Type: **Poster**

Dosimetric evaluation of newly developed well-type ionization chamber for use in the calibration of brachytherapy sources

Wednesday, 21 June 2017 15:30 (5 minutes)

PURPOSE: To evaluate the dosimetric characteristics of newly developed well-type ionization chamber and to compare the results with the commercially available calibrated well-type ionization chambers that are being used for the calibration of brachytherapy sources.

METHOS AND MATERIALS: The newly developed well-type ionization chamber (BDS 1000) has been designed for convenient use in brachytherapy. The chamber has a volume of 240 cm3, weight of 2.5 Kg and the chamber is open to atmospheric conditions. The chamber characteristics such as leakage current, stability, scattering effect, ion collection efficiency, air-kerma strength and nominal response with energy were studied with the BDS 1000 well-type ionization chamber. The evaluated characteristics of BDS1000 well-type ionization chamber were compared with two other commercially available well-type ionization chambers.

RESULTS: The measured leakage current observed was negligible for the newly developed BDS 1000 well-type ionization chamber. The ion collection efficiency was close to 1 and the response of the chamber was found to be very stable. The determined sweet spot was 42 mm from bottom of the chamber insert. The overall dosimetric characteristics of BDS 1000 well-type ionization chamber were in good agreement with the dosimetric characteristics of other two well-type ionization chambers.

CONCLUSION: The study shows that the newly developed BDS 1000 well-type ionization chamber is high in sensitivity and reliable chamber for air-kerma strength calibration. The results obtained confirm that this chamber can be used for the calibrations of HDR and LDR brachytherapy sources.

Country

India

Institution

Kidwai Memorial Institute of Oncology, Bangalore

Primary author: SAMINATHAN, Sathiyan (Kidwai Memorial Institute of Oncology)

Co-authors: HENRY FINLAY GODSON (Kidwai Memorial Institute of Oncology); MAZARELLO, James (ROSALINA India private limited, Mumbai, India); MANICKAM, Ravikumar (Kidwai Memorial Institute of Oncology); PONMALAR, Retna (Kidwai Memorial Institute of Oncology)

Presenter: SAMINATHAN, Sathiyan (Kidwai Memorial Institute of Oncology)

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