

Several investigators have shown that the wedge factor for megavoltage beams depends on the depth and the field size of a treatment field. This variation in wedge factor may be significant and many institutions participating in clinical trials are required to incorporate the dependence of wedge factor on depth and field size. We have investigated the variation in wedge factors for 6 MV and 15 MV x-ray beams on a Clinac 2100 C machine. Measurements were made in a water phantom at depths up to 20 cm for field sizes ranging from 5 cm x 5 cm to 20 cm x 20 cm for 15°, 30°, 45° and 60° wedges using a small volume (0.1 cc) ion chamber. The relative changes in wedge factors for a given wedge were determined by comparing the wedge factors to the value determined at 5 cm depth and a 10 x 10 field size. The results of our measurements show that for 6 MV x-ray the wedge factor increases to a maximum of 8% with depth and field size. For 15 MV x-ray the maximum increase is about 3%. The clinical significance of our results and its implementation in routine monitor unit calculation are presented.