

AbstractID: 1931 Title: Near Surface Dose for Dynamic and Physical Wedges

Contaminated electrons in clinical photon beams have substantial contribution to surface and near surface dose (i.e. 0.1 mm-1 mm) for perpendicular beams. Clinically, the higher surface doses are desirable for tumors involving skin. In much 3D forward treatment planning the wedges are used for dose distribution optimization. We performed point measurements to quantify the near surface dose at depth of 0.15 mm for photon beams with virtual wedges, and physical wedges using a diode detector in a plastic phantom. All the clinical beams with photon energies of 6 MV and 15 MV were generated with a Siemens Oncor linear accelerator. We studied the near surface dose for square field sizes of 6 cm \times 6 cm to 20 cm \times 20 cm for wedge angles of 15 to 60 degrees and source to surface distances (SSD) of 90 cm and 100 cm. For each field size and each wedge, we measured the relative dose at two off-axis points along the wedge gradient and at the center of each field. We compare the results with relative dose measurements performed for corresponding open fields. In general, the near surface dose for physical wedges are SSD dependent and are lower than virtual wedges and open fields by 10-25% for the above SSDs. Small fields with virtual wedges show surface doses close to open fields independent of wedge angle. However, for larger field size and higher wedge angles the maximum differences vary between -10% to 10% relative to open field along the wedge gradient.