

Knowledge of the dosimetric characteristic of the MLC-equipped accelerators is very important in clinical practice. But not much data are available on small fields dosimetry where “scaloping” effects at the edge of a field can bring significant contribution to the whole field and physicians can face a major dilemma trying to decide whether they can use a field with an MLC-defined shape instead of a custom made Cerrobend block. In the present study photon beams of 22 and 6 MV are used from a Philips SL-25 accelerator to study the ratio of areas (A) and penumbra effect for diamond shape of 6x6 and 10x10 fields. Isodose lines of 90, 80, 20, and 10 % at  $d_{max}$ , 5 cm, and 10 cm depth in water are recorded and analyzed. It was shown that a MLC-defined field gives a smaller ratio of areas compared with a custom made blocked field. As expected, this effect is larger for a smaller field. A maximum difference of 30% for A 90/10 and 23 % for A 80/20 is found for 6 MV beam between MLC and custom made block for 6x6 field and  $d_{max}$ . This difference becomes smaller with energy and depth. The difference in penumbras between two methods of defining the field increases both with an increase in field size and energy of a beam and decreases with depth. The conclusion from this study is that physicians have to be cautious when using small fields defined by MLC close to critical structures.