

When a block and tray are placed in a x-ray beam the dose to a point in a phantom is changed by the following factors: (1) attenuation of photon and electron fluence from the head of the accelerator by the tray and the block, (2) decrease in the scatter in the phantom that receives radiation, and (3) generation of scatter off the tray and block. This third factor is generally ignored and has been measured in this work. Measurements of incident photon fluence for 6 and 18 MV x-ray were made with a columnar miniphantom of 10 cm depth. A single-value tray transmission, tray factor, is usually measured with a 10cmx10cm field and used for all field sizes. The tray transmission factor is variable and is found to increase by 1.8% due to scatter off the tray when the field size is increased to 40cmx40cm. Scatter off a block was measured with a series of blocks with different size, square openings. It was found that scatter off a block could increase the incident photon fluence by as much as 2%. The magnitude of this block scatter depends on the equivalent square of the opening in the block and the difference between the equivalent square delimited by the collimator and delimited by the opening in the block. The total block-tray factor can be as much as 3% larger than the single-value tray factor traditionally used.