

**Purpose:** To report our experience concerning in-room scatter and shielding for a wide coverage multi-slice scanner. Our aim is to inform the medical physics community that special attention must be paid to the protocols used when performing scatter measurements and to the assumptions made when preparing shielding plans.

**Methods and Materials:** A Victoreen 450B-RYR ionization chamber and a RadCal 180 cc scatter probe were used to perform a shielding survey. Parameters of 140 kVp and 400 mAs were set. The largest collimation available, 80 mm coverage, was selected. A helical scan was prescribed. In-room scatter measurements were performed with the Victoreen 450B-RYR ionization chamber, RadCal probe, and an RTI solid-state R100 dose probe. Both helical and axial modes of acquisition were tested for collimations of 80 mm and 40 mm coverage. The vendor's phantom, the FDA CTDI body phantom and a thorax phantom were used.

**Results:** The shielding survey revealed that two walls, from below 6 feet to the ceiling line, failed the goal for an uncontrolled area (100 mrem/yr). Readings indicated that the dose was 2~10 times the limit. The ceiling readings, 2~15 times the limit, also failed. In-room scatter measurements revealed that scatter to multiple points are more than doubled when a helical scan is prescribed as compared to an axial scan. Furthermore, the thorax phantom generated 1.4 times more scatter than the FDA CTDI body phantom.

**Conclusions:** Radiation protection for volume scanners requires special attention. It is vital to consider differences in the scatter generated by axial and helical scanning modes. Scatter measured during helical acquisition is more clinically relevant. Choosing a phantom that best mimics the clinical scenario is important. Shielding planners for this type of unit should carefully consider ceiling shielding and wall shielding that extends beyond 7 ft.