

AbstractID: 6758 Title: Development of a Window-Based Shielding Computation Program for a Multi-Slice CT Scanner

Shielding computation for a multi-slice CT scanner requires information about weekly design exposure rate, occupancy factor, distance from isocenter to barrier and workload. Workload calculation for a particular procedure requires technique factors such as kVp, mA, time, number of slices for scan type, average number of patients per week, slice thickness for the selected procedure, simultaneous number of slices and scatter factor. A window-based computer program has been developed to compute shielding requirements using the AAPM Report # 39 as guideline. The machine parameters such as kVp, mA, time, slice thickness and scatter mR/scan either for head or for body are used to compute scatter factor. Scatter factor for a particular CT scanner is computed in a separate box with results directly interfaced to workload computation. A modified scatter factor for selected kVp may be entered when required. The computed workloads for individual procedures are displayed for confirmation. The user can compute workloads for 24 procedures both for head and body. The user can compute 12 different barriers: requirements for lead, concrete, gypsum, steel and glass. Any incorrect value can be modified without disturbing the rest of calculations. A printout for input parameters and barrier thickness for different materials is produced. Step by step guidelines, directions to compute scatter factor and general information are displayed to help the user. Methods to calculate parameters such as barrier thickness, barrier transmission, exposure rate and workload are displayed through a pull-down menu. This program reduces time and complexity required in CT shielding computation.