

AbstractID: 9509 Title: Comparison of Use of Cs-137 versus scattered x-ray beam for calibration of Diagnostic survey meters

**Purpose:** To determine the effect of the standard calibration of survey meters using Cs-137 compared to the clinical measurement of radiation exposure of scattered radiation from a typical diagnostic x-ray beam. **Methods and Materials:** A phantom consisting of 8 inches of Lucite was used as a source of scattered radiation. A standard pancake ion chamber with a volume of 150 cc that had been recently calibrated was used as a reference. Three different survey meters (Victoreen Model 470 A Panorama, Keithley Model 36150, and Fluke 451) used in various applications of radiation surveys were placed at the same distance from the center of the scattering material as the ion chamber. Each of the test survey meters had been calibrated recently with a Cs-137 source. X-ray exposures were made as a function of kVp and additional filtration (Al and Cu). Measurements were made in the integral and rate mode. **Results:** There was no significant deviation noted in the rate mode of the test meters compared to the 100 cc chamber. No significant systematic deviation was noted for exposures obtained with no additional filtration and the use of external filtration of Al and Cu to simulate the types of filtration encountered in modern x-ray and angiographic systems. Some systematic differences were noted for the integrate mode, but this appeared to be a function of the device and not the x-ray spectrum. **Conclusion:** The use of Cs-137 for calibrating survey meters used in diagnostic imaging radiation survey measurement provides an accurate calibration for diagnostic survey meters. Conversely, an x-ray beam with scatter could be employed to calibrate survey meters for diagnostic applications.