

AbstractID: 1186 Title: High-energy photon standard dosimetry data: A quality assurance tool

The Radiological Physics Center (RPC), through its on-site dosimetry reviews at institutions participating in NCI cooperative clinical trials, has accumulated high-energy photon dosimetry data for over 2350 photon beams. The measured values for percent depth dose, output factors, in-air off axis factors, wedge factors and tray factors have been collated for 81 different accelerator model/energy combinations for which we have 5 or more sets of measurements. For 56 of these combinations we have measurements on ten or more machines. The wedge and tray data come from 1087 Varian, Siemens and Philips/Elekta accelerators since 1985 and 343 tray transmission measurements since 1995. The data analyses indicate that for accelerator models of recent design the dosimetry data for a particular model/energy combination typically are within $\pm 2\%$. There is a larger spread in the data for the older models. A comparison of the RPC measured depth dose data with published depth dose data is presented with recommendations on which published data best represent each accelerator model/energy combination. The RPC "standard data" is defined as the mean value of 5 or more sets of dosimetry data or agreement with the published depth dose data (within 2%) for each model/energy combination. The RPC standard data can be used as a quality assurance tool to assist the Medical Physicist when commissioning an accelerator or identifying questionable dosimetry data.

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