

AbstractID: 2692 Title: Monte Carlo derivation of TG-43 dosimetric parameters for Radiation Therapy Resources and 3M Cs-137 sources

**Purpose:** In clinical brachytherapy dosimetry a detailed dose rate distribution of the radioactive source in water is needed to make a quality treatment planning. Two Cs-137 sources are considered in this study the Radiation Therapy Resources 67-800 source (Radiation Therapy Resources Inc., Valencia, CA) and the 3M model 6500/6D6C source.

**Material and methods:** A complete dosimetric dataset for both sources has been obtained by means of the Monte Carlo GEANT4 code.

**Results:** Dose rate distributions are presented in two different ways, following the TG43 formalism and in a 2D rectangular dose rate table.

**Conclusions:** This 2D dose rate table is helpful for the TPS quality control and it is fully consistent with the TG43 dose calculation formalism. In this work, several improvements to the previously published data for these sources have been included: the source asymmetries were taken explicitly into account in the MC calculations, TG43 data were derived directly from MC calculations, the data radial range was increased, the angular grid in the anisotropy function was increased and TG43 data is now consistent with the along and away dose rate table as is recommended by the TG43 Update.