

The 2 cm in length CSM2 and CSM3 sources (CIS, France) are widely used in manual and automatic afterloading in LDR brachytherapy. These sources were firstly studied by Williamson (IJROBP **15** (1988) 227-237) using his Monte Carlo (MC) code and by Liu *et al* (Med. Phys. **31** (2004) 477-483) using the Sievert algorithm, both assuming symmetric sources.

The purpose of this work is to use the MC code GEANT4 to obtain the TG43-formalism parameters for the CSM2 and CSM3-type sources taking into account its specific geometry in both ends, including the eyelet. The sources were placed in a 40 cm in radius spherical water phantom. Water kerma was scored using the linear track-length kerma estimator obtaining a mean statistical uncertainty less than 0.5%.

In order to validate MC calculations, an experimental set-up using TLD chips and a PMMA phantom has been designed. TLD measurements have been done at different distances from the source. A MC simulation in the PMMA phantom was done to calculate the dose received by the TLD chips. The TLD chips calibration was calculated according to the actual photon spectra derived from MC. The MC and TLD results are compatible within the uncertainty levels.

Rectangular coordinate dose-rate tables, dose-rate constant, radial dose function and anisotropy function have been obtained with MC. Deviations up to 6% in dose-rate data are found between these results and those previously published assuming symmetrical sources.