

The measurement of the dose in the near zone of brachytherapy sources has been impeded due to the large dose gradient and the need for a submillimeter, tissue equivalent detector. Most detecting systems, ionization chambers, semi-conductors, and film are not tissue equivalent, which adds to the uncertainty in the detector response.

Using two classes of chemical dosimeters this project has measured the near zone dose distribution of three brachytherapy source arrangements. The central axis dose distribution in the near zone of a 25 mgRaeq ^{137}Cs source, a strand of twelve 7.8 mgRaeq ^{192}Ir seeds spaced 0.5 cm apart, and a single 1.9 mgRaeq ^{192}Ir source were measured with Fricke gel and a custom made Polymer gel dosimeter. The results from the chemical dosimeters have been compared to results from gafchromic film (gaf) irradiations and a standard treatment planning system (TPS).

The measurement of the dose distribution in the near zone reveals results which are not consistent with a TPS which utilizes the Meiseberger formalism. The differences measured are larger for single ^{137}Cs and ^{192}Ir sources than for a strand of ^{192}Ir . In fact, both chemical dosimeters and gaf film reveal large differences in the near zone of single sources.