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Determination of transmission factors for an ^{85}Kr beta radiation beam using an extrapolation chamber

The ^{85}Kr isotope is a beta-ray emitter (gas) with a half-life of 10.76 years. It is produced in the fission of Uranium and Plutonium. The sources of this isotope are the nuclear tests, the nuclear reactors and the reprocessing of nuclear fuel. In the gas release events around reactors, the ^{85}Kr may represent a major hazard. In beta emitters, in order to evaluate the absorbed dose rate at different tissue depths, it is necessary to determine the transmission factors. In this work, the preliminary results of the determination of transmission factors of the ^{85}Kr source of a BSS2 beta secondary standard are presented. For this purpose, an extrapolation chamber was used. The results obtained are considered acceptable, and they are within the uncertainties, in comparison with the values provided by the source calibration certificate (PTB, Germany). The maximum difference between the results determined in this work and those from the calibration certificate was 3.8%.

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