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GAMMA DOSE RATE AND EFFECTIVE INDOOR GAMMA DOSE IN DWELLING OF CAMPANIA REGION

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Ionizing radiation from natural sources such as cosmic rays and terrestrial radiation, is the major contribute to the exposure for public population. In particular gamma radiation is the largest contributor to the external dose of the humans. Today it is assessed that the majority of inhabitants in urban areas spends about 80% of their time indoor, so their exposure to ionizing radiation from building material could be relevant. For this reason it is necessary to monitor the external exposure in the confined environments in order to be able to provide an appropriate protection to humans. The aim of the present study is to evaluate the indoor gamma exposure starting from the measurements of dose in dwellings in Campania, a South Italy region characterized by a soil rich in radioactive isotopes, using Thermo Luminescent Dosimeters TLD-100 (LiF:Mg,Ti). Additional purposes were the examination of the dependence of dose rate on materials, kind of building materials and measurement sites. Finally the corresponding effective mean dose rate for population was estimated. The annual dose rate, subtracting cosmic contribution, was found being 264 ± 111 nGy/h. Results of the survey show that the exposure in the coast zone homes is higher than that in the internal one. The analysis of effect of building materials has shown that houses made of cement and tuff have higher dose rate than houses constructed with a variety of other materials. The mean effective dose was estimated on the basis of the UNSCEAR model and was found to be 1.3 mSv/y, three times higher than Italian average.

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