Study on Radon Concentration and Annual Effective Dose of Smoking of Cigarettes Using LR-115 Detectors

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Abstract

The research work determined the annual effective dose by using solid state nuclear track detection technique in three kinds of smoking of cigarette. In the research work, LR-115 solid state nuclear detector was used. In the first time, the detectors were exposed for a period of 100 days in three types of cigarette samples by igniting one cigarette per day for twenty cigarettes (one package). Secondly, the detectors were exposed for a period of 10 days in three types of cigarette samples by igniting two cigarettes per day for twenty cigarettes (one package) .In the above two times, the lowest value of annual effective dose is 3.76±16.798325 mSv /yr that was obtained from sample 2, Red Ruby(one cigarette per day) and the highest value of annual effective dose is 27.13±1.7587395 mSv/ yr that was obtained from sample 3, London (two cigarettes per day). Finally, forty cigarettes (sample 1 only) were ignited per day for a period of 5 days. The LR 115 detector was exposed due to smoke of cigarette and its annual effective dose is 38.50±0.194808 mSv/yr which is the highest result in three times of research.

Key words: Cigarette, solid state nuclear track detector (SSNTD), radon concentration, annual effective dose

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