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Study of ^{210}Po in Indian tobacco using Liquid Scintillation Spectrometry

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A fast radioanalytical method has been developed to measure ^{210}Po in tobacco samples. After microwave digestion Polonium is extracted quantitatively from a 1 M hydrochloric acid solution into a solution of tri-octylamine in toluene. The extract was measured by Liquid Scintillation Counting in alpha mode. Caused by the high counting efficiency the counting time per sample can be reduced significantly compared to conventional alpha.spectrometry allowing for high sample throughput. The method was applied to 11 brands of cigarettes, beedis or chewing tobaccos from India. Based on the resulting activity concentrations and typical consumption habits annual and lifetime equivalent doses were calculated. They were found to be $\sim 100\text{-}700\ \mu\text{Sv/a}$ or $\sim 5\text{-}35\ \text{mSv}$, respectively.

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