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Determination of ^{226}Ra , ^{228}Ra and ^{210}Pb in wild mushrooms and soils collected in Poços de Caldas region**Rosa M.M.L.¹, Maihara VA², Taddei M.H.T.¹**¹Comissão Nacional de Energia Nuclear - Laboratório de Poços de Caldas - LAPOC, ²Instituto de Pesquisas Energéticas e Nucleares - Centro de Reator de Pesquisa

Studies have shown that wild mushrooms from different regions can be used as indicators of environmental contamination and ecosystem quality. The radionuclide transfer from soil to organic matter determines the extent of radioactive contamination around the nuclear facility. This, consequently, can constitute a risk of public exposure to radioactivity from the ingestion of food. The objective of this study was to determine radionuclides such as ^{226}Ra , ^{228}Ra , ^{210}Pb in samples of wild mushrooms and soils collected from the region of Poços de Caldas Plateau. This area is of great interest, because it presents high natural radioactivity and there was the first Brazilian uranium mine. Seventy areas of radioactive anomalies have been identified in this region. Twenty-four mushroom and soil samples were collected in humid areas under trees or in open fields from seven points, being two of them close to the high radioactive anomalies regions. For the determination of ^{226}Ra , ^{228}Ra and ^{210}Pb in mushroom samples a radiochemical separation followed by alpha and beta spectrometry was employed. These same radionuclides were determined by gamma spectrometry in soil samples. For validation of both methodologies soil IAEA 327 reference material was analyzed. Chemical yields for Ra isotopes were in the

73 to 99% range and 61 to 84% for Pb. The ^{226}Ra , ^{228}Ra and ^{210}Pb activity concentrations ranged from 1.0 to 170 Bq kg⁻¹, 0.6 to 120 Bq kg⁻¹ and 6 to 230 Bq kg⁻¹ for wild mushrooms, respectively. For the soil samples the ^{226}Ra , ^{228}Ra and ^{210}Pb activity concentrations ranged from 68 to 270 Bq kg⁻¹, 29 to 255 Bq kg⁻¹ and 52 to 392 Bq kg⁻¹, respectively. The result showed a variation of radionuclide activity in different areas of the region. Most samples showed higher Ra isotope activity when compared to ^{210}Pb . This is probably due to ^{210}Pb transfer in the environment especially through fallout, whereas Ra is essentially transferred by solution through bodies of water.

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