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NATURAL AND ARTIFICIAL RADIONUCLIDES DISTRIBUTION IN SOIL IN THE VICINITY OF COAL FIRED PLANTS OF WEST MACEDONIA, GREECE

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EXTENDED ABSTRACT

The distribution of natural ^{40}K, ^{226}Ra and ^{228}Ra and artificial ^{137}Cs has been investigated in the topsoil over the Kozani-Ptolemaida-Amynteon lignite basin in West Macedonia. Four lignite power plants are situated there, accounting for about 70% of the total electrical energy produced in Greece. This investigation deals with the determination of Ra-226, Ra-228, K-40 and ^{137}Cs concentrations in soil samples (0-10 cm and 10-20 cm deep) from both undisturbed and cultivated soils. Statistical analysis shows that no significant increase in soil specific activity due to natural radionuclides has been found in the area of fly ash particle deposition. The numerical values of ^{226}Ra, ^{228}Ra and ^{40}K specific activity are equal to those mentioned in literature for Greek soils. Concerning radiocesium, it has been detected in all samples at specific activities ranging between 1 and 395 Bq/kg, but these values do not correlate with the other investigated natural radionuclides. Furthermore the Cs-137 concentrations found in 0-10 cm samples are slightly higher than those found in 10-20 cm.

Key words: Greece, lignite, coal power plant, natural radionuclides, radiocesium