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`ABSTRACT

The present study aims mainly to investigate the natural radioactivity, dose rate and the environmental impacts in the soil samples from Nasr City and Heliopolis regions.

The concentrations and distribution of radionuclides in petrified wood forest in El-Qattamia in Nasr City have been determined using high resolution gamma spectrometry to evaluate the environmental radioactivity. The mean activity concentrations of ^{238}U, ^{232}Th and ^{40}K were 65.26±12.99, 23.66±0.95 and 146.33±1.50 $Bqkg^{-1}$, respectively. Data of the soil samples show evidence of possible deposition and accumulation of ^{137}Cs. The mean activity concentration of ^{137}Cs in the soil samples was 4.37±0.16 $Bqkg^{-1}$ with a range of 0.00–35.70 $Bqkg^{-1}$. The measured activity concentration range of ^{137}Cs was compared with reported ranges in literatures for some locations in the world.

The dose rate in air, annual effective dose rate, radium-equivalent; and are in agreement with recommended values. The mean External hazard index are (43.58nGyh^{-1} , 0.05mSv, 44.43$Bqkg^{-1}$and 0.15) respectively, then all these hazard parameters activity concentrations of the gamma-emissions from radionuclides in El-Qattamia petrified wood forest region were relatively low.

The average activity concentrations of ^{232}Th and ^{40}K for 3rd Settlement were (25.50& 310.25 $Bqkg^{-1}$) respectively and for 1st Settlement were (17.84& 142.88 $Bqkg^{-1}$) respectively in Nasr City, which are in agreement with world wide average value. But the average activity concentration of

^{238}U for 3rd& 1st Settlements were (76.20& 70.33 $Bqkg^{-1}$) respectively which these values is relatively higher two times than the average world wide values (35, 30 and 400 $Bqkg^{-1}$) for ^{238}U, ^{232}Th and ^{40}K respectively.

The average activity concentrations of ^{238}U, ^{232}Th and ^{40}K in other locations in Nasr City (Al-Autostorad, El-Qattamia, El-Tayaran Street, 8-region) are agreement with the average world wide value, except one region (6-region) where the activity concentration of ^{238}U (49.17$Bqkg^{-1}$) which is relatively high, while the average activity concentrations of ^{232}Th and ^{40}K in 6-region are agreement with the corresponding world wide value.

The average activity concentrations of ^{238}U, ^{232}Th and ^{40}K for (Almazza and Massaken El-Sheratoon) in Heliopolis are in agreement with the average world wide value, except one region (Al-Autostorad) where the activity concentration of ^{238}U (60.33$Bqkg^{-1}$) is relatively high, while the average activity concentrations of ^{232}Th and ^{40}K in Al-Autostorad are in agreement with the corresponding world wide value.

Some selected samples of relatively high uranium concentrations at 3rd and 1st settlements are subjected to chemical and mineralogical analysis; these samples contain heavy minerals such as Opaque, Zircon, Tourmaline, Rutile, Staurolite, Garnet, Augite Kyanite and Hornblend.

The out put results referred to all these localities indicates that these regions are not hazardous from the environmental point of view. These valuable results can be considered as a data base for radiation background for decision makers.

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