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Radioactivity levels and the assessment of the associated health hazards at Um Bogma Area, Sinai, Egypt

Radioactivity levels and the assessment of the associated health hazards at Um Bogma Area, Sinai, Egypt
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Abstract
As a part of the national survey to evaluate some strategic elements such as U, Mn, Fe, Ca and Zn, we have undertaken a quantitative study to fulfill this target. The concentration of some these elements have high values up to 50%, 18.4%, 10.9% and 4.8% for Fe, Mn, Ca and Zn respectively [1].Um Bogma area has an open industrial field and is considered to be one of the most rich region in natural resources in Egypt. Therefore, safety rules for workers should be precisely estimated and strictly applied. The concentrations and distributions of natural radionuclides for sedimentary twenty two rock samples from Um Bogma which subdivided into four localities [Abu Zarab (AZ), Sad Elbanat (SB), Talet Selim (TS) and Allouga (AG)] have been measured using gamma spectroscopy technique. The average concentration values of 238U, 232Th, and 40K in the surveyed samples are (696.06±5.9) Bq kg−1 for 238U, (45.4784±1.9) Bq kg−1 for 232Th and (362.13±8.5) Bqkg-1 for 40K.the ratios 238U (226Ra)/ 40K and 238U(226Ra)/232Th have been utilized to determine the 238U level of content in the investigated area. Also, these measurements are very important to detect the harmful effects associated with the existing high radioactivity levels in Um Bogma area, Sinai. The radiation hazard parameters, such as absorbed dose rate, the annual effective absorbed dose rate, external hazard index, internal hazard index, and the representative level index were calculated from the measured concentrations of natural radioactivity.

Keywords: X-Ray, Natural radioactivity, Radionuclides, Hazards parameters, Sinai.

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