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Abstract:

Uranium, radionuclide's, thorium and potassium are relatively abundant in soils. Because of their radiation, these radionuclide's pose exposure risks that can lead to health problems such as cancer for exposed people. There is therefore growing concern about the health risks associated with exposure to the natural sources of radiation in our environment. The specific activity ^{238}U, ^{232}Th ,^{40}K,^{226}Ra in forty soil samples collected from different locations of Al-sindbad land in the province of Basra – Iraq using Sodium Iodide NaI(TL) detector. The specific activities for the whole study areas were compared the Local , world average and permissible recommended limits. The results showed thatthe specific activity of^{226}Ra,^{232}Th,^{238}U, and ^{40}K, in the samples rang from(17.14-39.07)Bq/kg,(1.8-22.88) Bq/kg, (0.68-2.24) Bq/kg and (278.11-402.29)respectively, Also evaluation of radiological hazard effects for Gamma ray (the radium equivalent rate (Raeq) which calculated from concentration of ^{232}Th,^{238}Uand ^{40}K ranges between (30.72-65.48) Bq/kg with mean value of (43.362)Bq/kg, the absorbed dose Rate (D γ) for the soil samples in the study area range from (26.54-43.92) nGy/h with an average value of(33.216)nGy/h, the annual effective dose rate ($AEDE_{oo}$) range (0.13-0.22)mSv/y with an average value of(0.163) mSv/y, The annual effective dose rate ($AEDE_{in}$) range (0.03-0.05) mSv/y with an average value of(0.04) mSv/y, The internal hazard index (Hin) range (0.2-0.35) with an average value of(0.255)and the external hazard index (Hex) range (0.15-0.25) with an average value of (0.186).The results of the present study have shown that the rates of Specific activity of^{226}Ra,^{238}U, ^{232}Th and^{40}K, and radiological hazard effects Rate for Gamma- ray in environmental samples were all lower than the value of the global limit(33 ,35, 30, 400)Bq/kg respectively according to UNSCEAR. We conclude from this study that the environment of Al-Sindbad land in the province of Basra – Iraq is within a normal background radiation.

Keywords: Basra, Al-sindbad land , NaI(TL) detector

1-Introduction

The soil has always been important to human health. It provides a resource that can be used for food production. There for it needs a special monitoring program since it has a direct threat to health of human and environmental .It is the main source of food through its direct contact with the agricultural soil. Through the ingestion , inhalation and skin absorption the radionuclide and biological component of the soil therefore it can be threats the human health. Cancers caused by the inhalation of fibrous or radon gas derived from the radioactive decay of U in soil minerals [1]. The Know levels of concentration of natural radionuclide's in the soil and their distribution in the environment is of great interest in many field of sciences[2].The programs of the scientific monitoring of environmental radioactivity in Iraq began in 1968 in the Atomic