

Abstract:

The level of natural radioactivity has been studied in the bottom river sediments of Euphrates river course through three governorates (AL-Najaf AL-Ashraf , Babylon and AL- Qadisiya).Where thirty samples from river sediments(ten samples at each governorate) were taken to laboratory for radio analysis. These spectral measurements were carried out by the use of NaI(Tl) detector that has the dimensions of (3"×3") high efficiency .The radioactivity of naturally composed radioactivity nuclide, and for natural decay series. The specific activities of the studied samples measured by units(Bq\Kg) then the spectra of studied samples were analyzed. The specific activities in the three governorates respectively in AL-Najaf AL-Ashraf it has been found the values of ^{40}K varies from 324.62 ± 3.15 to 413.29 ± 3.8 Bq\Kg and average value of 362.46 ± 4.54 Bq\Kg . the values of ^{238}U from 9.51 ± 0.53 to 20.22 ± 0.8 Bq\Kg and average value of 15.28 ± 9.92 Bq\Kg. The values of ^{232}Th from 5.3 ± 0.24 to 9.92 ± 0.34 Bq\Kg and average value 7.62 ± 0.26 Bq\Kg. In Babylon the values of ^{40}K from 335.49 ± 3.33 to 405.26 ± 3.37 Bq\Kg and average value of 381.87 ± 3.4 Bq\Kg . the values of ^{238}U from 10.02 ± 0.55 to 20.00 ± 0.82 Bq\Kg with on average value of 15.24 ± 0.59 Bq\Kg. The values of ^{232}Th from 4.9 ± 0.24 to 8.45 ± 0.31 Bq\Kg and average value 7.17 ± 0.19 Bq\Kg. In AL-Qadisiya the values of ^{40}K from 303.37 ± 3.21 to 421.76 ± 4.06 Bq\Kg and average value of 382.88 ± 9.52 Bq\Kg . The values of ^{238}U from 8.15 ± 0.54 to 23.95 ± 0.95 Bq\Kg with on average value of 15.46 ± 0.74 Bq\Kg. The values of ^{232}Th from 8.24 ± 0.34 to 12.63 ± 0.39 Bq\Kg and average value 9.97 ± 0.21 Bq\Kg .

The resulted average of specific activities in the three governorates were compared to the average values permitted by UNSCEAR for ^{40}K , ^{238}U and ^{232}Th which are (400,32,30) Bq\Kg respectively , and they were found to be

within the permissible values. The average value of Radium Equivalent , activity concentration index, External Hazard index, Internal Hazard index , Absorbed Dose and Excess life time cancer Risk have been calculated. All of them were within permissible limits.

Keyword: Assessment of Radiological, Radiological Hazard, Sediment River, Euphrates River , NaI(Tl).