

الاي ة

بسم الله الرحمن الرحيم

قال تعالى ﴿ وَآيَةٌ لَهُمُ الْأَرْضُ الْمَيِّتَةُ أَحْيَيْنَاهَا وَأَخْرَجْنَا مِنْهَا حَبًّا فَمِنْهُ
يَأْكُلُونَ (33) وَجَعَلْنَا فِيهَا جَنَّاتٍ مِنْ نَخِيلٍ وَأَعْنَابٍ وَفَجَّرْنَا فِيهَا مِنَ
الْعُيُونِ (34) لِيَأْكُلُوا مِنْ ثَمَرِهِ وَمَا عَمِلَتْهُ أَيْدِيهِمْ أَفَلَا يَشْكُرُونَ (35)
سُبْحَانَ الَّذِي خَلَقَ الْأَزْوَاجَ كُلَّهَا مِمَّا تُنْبِتُ الْأَرْضُ وَمِنْ أَنْفُسِهِمْ وَمِمَّا لَا
يَعْلَمُونَ (36)﴾

صدق الله العظيم

سورة يس

Dedication

To my father's pure spirit and my dear mother
To everyone who stood beside me to all my friends

Acknowledgement

I am in great debt to my supervisor Dr. RawiaAbdElganiElobaid Mohammed for his advice and guidance and abundant information that helped me to do this work. Greet thanks to Radiation Measurement Lab, Sudan Atomic Energy Commission for his advice and support during the sample measurement.

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Abstract

Natural radioactivity in soil represents source of continuous exposure to human beings. The aim of this study is to measure the activity concentration as well as the absorbed dose and annual effective dose of the naturally occurring radio nuclides Ra-226, Th-232 and K-40 in Port Sudan Locations soil. Samples collected from three dissector in Port Sudan Locations.

Activity concentrations were measured using Gamma ray spectrometry (NaI) detector. Results showed that, the average activity concentrations of Ra-226, Th-232 and K-40 from the three dissectors (eastern, middle and southern). The average activity concentrations from eastern dissector were found to be (18.814 , 25.696 and 424.862) Bq/kg respectively with an average absorbed dose of 41.9278114 nG y/h .The average annual effective dose value was found to be 51.420267 msv/y .

The average activity concentrations from middle dissector were found to be (27.52, 35.45 and 522.08) Bq/kg respectively with an average absorbed dose of 55.897880 nGy/h. The average annual effective dose value was found to be 68.553127 msv/y.

The average activity concentrations from southern dissector were found to be (25.29, 42.13 and 588.09) Bq/kg respectively with an average absorbed dose of 61.65247 nG/h .The average annual effective dose value was found to be 75.61059 msv/y.

The obtained results were compared the three dissectors with them and found to be within the acceptable level and the recommended value for the effective dose is 1 msv/y.

المستخلص

النشاط الإشعاعي الطبيعي في التربة يمثل مصدر التعرض المستمر للبشر . الهدف من ه ذه الدراسة قياس تركيز النشاط الاشعاعي والجرعة الممتصة والجرعة الفعالة السنوية للنويدات المشعة طبيعيا وهي (الراديوم 226 , الثوريوم 232 والبوتاسيوم 40) لمحلية بورتسودان وتشمل (القطاع الشرقي , القطاع الاوسط والقطاع الجنوبي).تم قياس النشاط الاشعاعي باستخدام جهاز يوديد الصوديوم. ووجد ان معدل تركيز النشاط الاشعاعي للقطاع الشرقي تساوي (18.814 , 25.696 , 424.862) بيكريل /كجم علي التوالي مع معدل جرعة ممتصة تساوي 41.9278114 نانو قراري /ساعة . ووجد ان معدل الجرعة الفعالة السنوية يساوي 51.420267 ملي سيفرت /سنة .

معدل تركيز النشاط الاشعاعي للقطاع الاوسط تساوي (27.52 , 35.45 , 522.08) بيكريل /كجم على التوالي مع معدل جرعة ممتصة 55.897880 نانو قراري /سنة . ووجد ان معدل الجرعة الفعالة السنوية يساوي 68.553127 ملي سيفرت /سنة .

معدل تركيز النشاط الاشعاعي للقطاع الجنوبي يساوي (25.29 , 42.13 , 588.09) بيكريل/كجم علي التوالي مع معدل جرعة ممتصة 61.652471 نانو قراري /ساعة. ووجد ان معدل الجرعة الفعالة السنوية يساوي 75.61059 ملي سيفرت /سنة .

تم مقارنة القطاعات الثلاث مع بعضها البعض ووجد انها ضمن القيم المسموح بها والموصى بها عالميا 1ملي سيفرت /سنة .

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