



*Ain Shams University
Women's College for Arts,
Science and Education
Physics Department*

**STUDY OF ENVIRONMENTAL
POLLUTION ON THE NORTHERN
COASTAL PLAIN OF THE SINAI
PENINSULA, EGYPT**

**Thesis
Submitted in the partial Fulfillment
For M. Sc. Degree in Physics
To
Physics Department
Faculty of Girls for Arts, Science and Education
Ain Shams University
By**

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Abstract

The main target of this study is to measure the concentration of natural radionuclides for 19 samples collected from Alarish and Al-bardawil in northern coastal plain of the Sinai peninsula of Egypt.

The concentration of the natural radionuclides are measured in all the studying samples to find the specific radioactivity of ^{238}U -series, ^{232}Th -series and ^{40}K by using a high resolution gamma ray spectrometer based on coaxial HpGe detector shielded by cylinders of lead, copper and cadmium. The analysis of data is completed by using a computerized analyzer fitted with a high multichannel analyzer with high level software programs. The radionuclide concentrations in the different samples are compared with the permissible levels proposed by the International Atomic Energy Agency (IAEA), this comparison is of scientific interest to health physics.

The sample locations, collection methods and preparation procedures have also been discussed. Nineteen samples were collected and divided into two classes: 16 samples from Alarish and 3 samples from Albrdawil. From the result analysis, most the specific activities of ^{238}U and ^{232}Th were found to be higher than the permissible level for Alarish samples.

The area under investigation is classified as having a high level natural radioactivity concentration, and can be considered as unsafe area and therefore we can conclude that it is dangerous to use monzite and zircon as raw materials in different industries due to their radiation hazard effects.



On the other side, we find that this area is characterized by high concentrations of heavy minerals which are considered to be of some economic value. So in the present work we have measured also these concentrations in samples using two different techniques: ground spectrometric survey and mineralogical investigation.

Natural radiation levels in Alarish region are higher than normal which are believed to be emitted from the monazite and zircon bearing beach sands. These minerals contain radionuclides, which is the main cause for natural radiation in the northern coastal plain of Sinai. The hazard index for the critical area seems to be high. It is concluded that harmful radiation effects are pose to the public and tourists going to the beaches for recreation or to the sailors and fishermen involved in their activities in the area as a results of the activity of beach sediments.



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