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

Mona Mostafa Mostafa Mohammed Elbarbary

B. Sc. in Physics, 2003

Prof. Dr. Amany Taha Sroor
Prof. of Nuclear Physics
Faculty of Girls for Arts,
Science and Education
Ain Shams University

Pro. Dr. Nadia Walley El-Dine
Prof. of Nuclear Physics
Faculty of Girls for Arts,
Science and Education
Ain Shams University

Dr. Ibrahim Mohamed Gaafar
Associate Prof. of Applied geophysics
Nuclear Materials Authority, Cairo, Egypt

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A Thesis for M.Sc in Physics

Mona Mostafa Mostafa Mohammed Elbarbary

Title of thesis

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Thesis Supervisors

Prof. Dr.Amany Taha Sroor
Prof. of Nuclear Physics
Faculty of Girls for Arts,
Science and Education
Ain Shams University

Prof. Dr. Nadia Walley El-Dine
Prof. of Nuclear Physics
Faculty of Girls for Arts,
Science and Education
Ain Shams University

Dr. Ibrahim Mohamed Gaafar
Associate Prof. of Applied geophysics
Nuclear Materials Authority, Cairo, Egypt

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

Student name: ***Mona Mostafa Mostafa Mohammed Elbarbary***

Scientific degree: `Master in Physics`

Department: `Physics Department`

Faculty: `Faculty of Girls for Arts, Science and Education`

University: `Ain Shams University`

Date of graduate: `Bachelor Science in Physics Science 2003.`

Date of granted: `M.Sc in Physics 2011.`

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

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قسم الطبيعة

دراسة التلوث البيئى على الساحل الشمالى لشبه جزيرة سيناء مصر

رسالة مقدمة من الطالبة

منى مصطفى مصطفى محمد البربرى

بكالوريوس علوم 2003

للحصول على درجة الماجستير في الفيزياء

إلى

قسم الفيزياء

كلية البنات للآداب والعلوم والتربية

جامعة عين شمس

المشرفون

ا. د. امانى طه سرور
أستاذ الفيزياء النووية
كلية البنات جامعة عين شمس

ا.د. نادية السيد ولى الدين
أستاذ الفيزياء النووية
كلية البنات جامعة عين شمس

د. ابراهيم محمد جعفر
أستاذ مساعد الچيوفيزياء
هيئة المواد النووية

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رسالة ماجستير

اسم الطالبة: منى مصطفى مصطفى محمد البربرى

: دراسة التلوث البيئى على الساحل الشمالى لشبه جزيرة سيناء مصر

اسم الدرجة : ***ماجستير***

لجنة الاشراف

ا. د. امانى طه سرور	**ا.د. نادية السيد ولى الدين**
أستاذ الفيزياء النووية	أستاذ الفيزياء النووية
كلية البنات جامعة عين شمس	كلية البنات جامعة عين شمس

د. ابراهيم محمد جعفر

أستاذ مساعد الچيوفيزياء

هيئة المواد النووية

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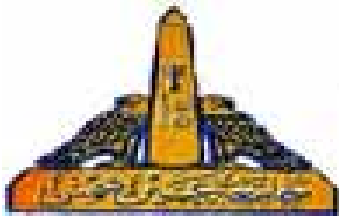

جامعة عين شمس
كلية البنات
للآداب والعلوم والتربية
قسم الطبيعة

اسم الطالبة : : **منى مصطفى مصطفى محمد البربرى**

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شكر

أتوجه بالشكر لله عز و جل توفيقه لي في اتمام هذه الرسالة.

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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.

Abstract

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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