بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

THE USE OF GAMMA-RADIATION AND POLYMERIC MATERIALS IN THE REMOVAL OF SOME TOXIC POLLUTANTS FROM POLLUTED WATER.

By

MONA EID MOHAMED MOHAMED

B.Sc. Fac. of Science, Ain Shams University, 1980.
Diploma in Environmental Sci., Ain Shams University,1988.
Master in Environmental Sci., Ain Shams University,1996.

A Thesis Submitted for Doctor of Philosophy
in
Environmental Science

Department of Biological and Physical Science
Institute of Environmental Studies & Research
Ain Shams University

2002

B ٥١٢٠

APPROVAL SHEET

THE USE OF GAMMA-RADIATION AND POLYMERIC MATERIALS IN THE REMOVAL OF SOME TOXIC POLLUTANTS FROM POLLUTED WATER.

By

MONA EID MOHAMED MOHAMED

B.Sc. Fac. of Science, Ain Shams University, 1980.
Diploma in Environmental Sci., Ain Shams University,1988.
Master in Environmental Sci., Ain Shams University,1996.

This Thesis for Ph.D. Degree in Environmental Science has been approved by:

Name: **Signature:**

1- Prof. Dr.H.A.Ismail
Prof. of Nuclear Phys., Faculty of Education, Ain Shams University

2- Prof. Dr.A.M.Zahra
Prof. of Physical Chemistry, Faculty of Education, Ain Shams University

3- Prof.Dr.G.A. El-Shobaky
Prof. of Physical Chemistry, National Center of Research

4-Prof. Dr.A.M. Dessouki
Prof. of Radiation Chemistry, National Center for Radiation Research and Technology

THE USE OF GAMMA-RADIATION AND POLYMERIC MATERIALS IN THE REMOVAL OF SOME TOXIC POLLUTANTS FROM POLLUTED WATER.

By

MONA EID MOHAMED MOHAMED

B.Sc. Fac. of Science, Ain Shams University, 1980.
Diploma in Environmental Sci., Ain Shams University,1988.
Master in Environmental Sci., Ain Shams University,1996.

A Thesis Submitted for Doctor of Philosophy

in

Environmental Science

Department of Biological and Physical Sciences

Under The Supervision of :

1-Prof. Dr.H.A.Ismail
Prof. of Nuclear Phys., Faculty of Education,
Ain Shams University

2-Prof. Dr.A.M. Dessouki
Prof. of Radiation Chemistry, National Center
for Radiation Research and Technology

3-Dr. H. A. El-Boohy
Assistant Prof. of Polymer Chemistry ,
National Center for Radiation Research and Technology

ABSTRACT

Mona Eid Mohamed Mohamed

"The Use of Gamma-Radiation and Polymeric Materials in the Removal of Some Toxic Pollutants From Polluted Water."

National Center for Radiation Research and Technology
(Atomic Energy Authority - Egypt)

Gamma radiation degradation of polluted water containing different anionic and non-ionic detergents were studied as a function of the detergent concentration, pH, dose and dose rate. The anionic detergents were Texapone, Acyl Sarcoside, Diethanol Amide of Coconut Fatty Acid, Alkyl Sulfonate and Leonil UN-ET, while the non-ionic detergents were Alkyl Polyglycol Ether, Hostapal SF-ET, Hostapal CV-ET and Tween-60. The synergistic effects resulting from addition of nitrogen, oxygen and hydrogen peroxide on the degradation process were investigated. The results showed that radiation degradation resulted in degrading the pollutants to a high extent (between 80-95%). The ability of using Granular Activated Carbon, Agricultural By- Products (Sugar Cane Bagasse and Rice Straw), Ion Exchange Resins (Merck II ,III and IV) and the grafted polymeric membranes from Low Density Polyethylene were carried out. From the results, It can be concluded that, gamma radiation coupled with adsorption was the best method for the removal of these pollutants and down their concentrations below the maximum permissible value according to the FAO regulations than the adsorption process alone and it was the most economic one.

Key Words: *Detergents-Gamma Radiation - Adsorption - Removal Ion Exchangers - Polymeric Membranes.*

بسم الله الرحمن الرحيم