شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائـــــــق الاصليـــــة تالفـــة

بالرسالة صفحات لم ترد بالاصل

Recovery of Heavy Metals from Sludges and Wastewaters

A Thesis Presented
To

Chemistry Department
Faculty of Science
Cairo University

By

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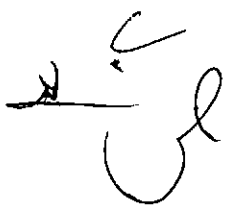
For

The Degree of
Doctor of Philosophy in Science



2002

APPROVAL SHEET FOR SUBMISSION

Title of Ph.D. Thesis: Recovery of Heavy Metals from Sludges and Wastewaters

Name of the candidate: Hanan Sayed Abdel-Rahman Ibrahim

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ABSTRACT

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Title of Thesis: Recovery of Heavy Metals from Sludges and Wastewaters.
Degree: Doctor of Philosophy in Science, Cairo University 2002

Recovery of metals from industrial wastewater, after ion exchange treatment, is strong economic driving force even in cases when discharge limitations can be met by precipitation. The main objective of this study to use bench scale column runs to assess the effectiveness of ion exchange resin for metal recovery at different operating conditions. The results indicate that strongly basic anion exchange resin is highly efficient for chromate removal and the selectively of chelating cation exchange resins for metals removal increases in the following order: Cu > Ni > Cd. This evaluation address the product quality, pollution prevention potential, and the factors involved in the use of ion exchange to recover Cd, Cu, Cr (VI), Ni from industrial wastewater.

The quantity of sludge produced by the Greater Cairo wastewater treatment plants is large and will increase to about 360,000 tons dry solids / year by 2020. Land application of sewage is widely used in Egypt; however, the principal environmental concern is due to the inevitable presence of heavy metals. The objective of this study is to assess the effective methods for metals removal from sludge to reduce health risks during land application. The results showed that acid leaching was more efficient for metals removal from sludge except for lead and copper EDTA leaching was more efficient. The optimum treatment efficiencies of metals extraction from sludge are related to the nature of metals in sludge, dosage of extractants, pH, sludge solid content, and reaction time. Stringent industrial effluent control, coupled with improved industrial technology should be effective in reducing the heavy metal contents of sludge in Egypt.

Key words: Recovery; Removal; Heavy Metals; Wastewater; Anion Exchange Resin; Chelating Cation Exchange Resin; Sludge; leaching.

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To THE SOUL OF
"MY MOTHER"

ACKNOWLEDGEMENTS

First of all, I' m deeply thankful to **Professor Dr. N. T. Abdel-Ghani**, Professor of Inorganic and Analytical Chemistry, Faculty of Science, Cairo University, for his kind supervision, valuable advice, guidance and invaluable criticism and discussions.

It is my pleasant duty to assure my sincere appreciation, my deepest thanks and gratitude to **Professor Dr. M. R. Lasheen,** Professor of Water Chemistry, Water Pollution Research Department, National Research Center, for suggesting the topic of this study, his kind supervision, valuable assistance, valuable advice, guidance and suggestions through these studies.

I also wish to express my highest appreciation and everlasting gratitude with deep thanks to **Professor Dr. Azza Ashmawy**, Professor of Wastewater treatment technology, Water Pollution Research Department, National Research Center, for her valuable discussion, guidance, valuable advice, criticism and for her constant encouragement.

Special thanks must go to colleagues in the Water Pollution Research Department, National Research Center for the atmosphere they have created and the help they have given.

Finally, I would like to express my deep thanks to my dear father, my lovable brother, his family, my truehearted friend Dr. Hoda and grandmother for their spiritual support and continuous encouragement.

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