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كلية العلوم البحتية والتطبيقية

قسم الكيمياء البحتية والتطبيقية

Chemical analysis of wastewater from paint industries in Khartoum state

A project report submitted in partial fulfillment of the requirement of the award of the degree of master of science (industrial chemistry)

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Specially dedicated to my beloved extend family ,nuclear family ,my friends , and my respected supervisor

Acknowledgement

In the name of the almighty Allah s.w.t, the most gracious and merciful with his gracing and blessing has to success be upon , first and foremost ,I wish to express my sincere appreciation to my thesis supervisor **Prof /sheskh idriss** for his precious guidance , encouragement , constructive , advice , knowledge and motivation .without his continual support and interest , this thesis would not have been the same as presented here

Abstract

In this study analysis was carried out for industrial wastewater of paint in khartum industry area to evaluate the different parameters of wastewater of paint

Physical characteristic of industrial wastewater of paint were determined including hydrogen ion concentration PH ,turbidity and total dissolved solids , chemical characteristics have done too ,such as BOD,COD and phosphate , photometer analysis was carried out for determination of nitrate and ,nitrite , atomic absorption spectrometry was used to determine cadmium Cd , and lead Pb

In general, industrial wastewaters may contain suspended, colloidal and dissolved (mineral and organic) solids. In addition, they may be either excessively acid or alkaline and may contain high or low concentrations of colored matter. These wastes may contain inert, organic or toxic materials and possibly pathogenic bacteria. These wastes may be discharged into the sewer system provided they have no adverse effect on treatment efficiency or undesirable effects on the sewer system. It may be necessary to pretreat the wastes prior to release to the municipal system or it is necessary to a fully treatment when the wastes will be discharged directly to surface or ground waters.

الملخص

يهدف البحث الي دراسة خواص مياه الصرف الصناعي لمصانع البوهيات في ولاية الخرطوم وفي هذه الدراسة تم تحليل العينات لقياس بعض المعايير لمياه الصرف الصناعي لمصانع البوهيات والتي تتمثل في الخصائص الفيزيايئه والكيميايئه

اجريت التحاليل المختبريه والتي تتمثل في قياس كل من رقم الاس الهيدروجيني والعكارة والاملاح الصلبه الذائبه كما انه تم ايضا قياس محتوا المياه علي كل من الامونيوم والنتريت والنترات والفوسفات والزيوت والشحوم بالاضافة الي العناصر الثقيلة وهي الرصاص والكادميوم وايضا تم تحديد كمية الاوكسجين المستهلك حيويا وكيميائيا وكانت هذه التحاليل باستخدام اجهزة الطيف المرئي والامتصاص الزري

النتائج المتحصل عليها من هذه التحاليل اشارة الي ان مياه الصرف الصناعي لمصانع البوهيات بولاية الخرطوم لا تحتوي علي معدني الرصاص والكادميوم كمعان الثقيله كما انها اشارة ايضا الي انخفاض كمية الاوكسجين المستهلك في العمليات الحيوية الموجد في هذه المياه بالاضافة الي ذلك كان معدل ايون الهيدروجين في المياه هو 7.3 وهو مقبول حتي في مياه الشرب الا انه وجد انها تحتوي علي معدل عالي من الزيوت والشحوم

Objective

The target of this study is to know the chemical and physical characteristics of an industrial wastewater of paint and to determined the heavy metal which is exist on it

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Chapter 1

INTRODUCTION

1.1 Back round

Wastewater is any water which has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations. In the most common usage, it refers to the municipal wastewater that contains a broad spectrum of contaminants resulting from the mixing of wastewaters from different sources.[1] Wastewater can be broadly classified depending upon the source it is obtained from i.e. Domestic or Municipal Wastewater and Industrial Wastewater. The domestic wastewater is obtained directly from residential buildings. It includes waste water obtained from toilets (human waste), sinks bathing and laundry etc. It might contain intestinal disease organisms.[2] The industrial wastewater discharged directly from different industries such as electroplating, lock manufacturing, small scale industries, die casting, meat production industries etc. This is discharged by manufacturing processes and commercial enterprises.[3] Process wastewater can contain rinse waters including such things as residual acids, plating metals, and toxic chemicals. The sources of municipal wastewater are human waste, cesspit leakage, septic tank discharge, sewage treatment plant