Inks and glue polluted waste water analysis and treatment

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INKS AND GLUED POLLUTED WASTE WATER ANALYSIS AND TREATMENT

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"IN THE NAME OF ALLAH, THE BENEFICENT, THE MERCIFUL"

Praise is to Allah the cherisher and sustainer of the worlds...

Most gracious, most Merciful...

Master of the Day of Judgment...

Thee do we worship, and thine aid we seek...

Show us the straightway...

The way of those on whom thou has bestowed thy grace, those

Whose (portion) is not wrath. And who go not astray...

Thesis Similarity Report

DECLARATION

I **FAISAL NAZIR** S/O **NAZIR AHMAD** ID**:15004140022** session **2105-2017** hereby declare that the matter printed in this thesis titled ‘‘**Inks and Glue Polluted Wastewater Analysis and Treatment**’’ is my own work and has not been printed, published and submitted as research work, thesis or publication in any form of University,Research institute etc. in Pakistan or Abroad.

Dated ……. …….

(Faisal Nazir)

RESEARCH COMPLETION CERTIFICAT

Certified that the research work contained in this thesis titled "**Inks and Glue Polluted Waste Water Analysis and Treatment**" has been carried out and completed by **Faisal Nazir** I D**: 15004240022.** The quantum and the quality of the work contained in this thesis are adequate for award of degree MS/M.Phil.

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DEDICATION

“I dedicate this thesis to my Parents, Brothers and sisters who have supported me, friends, and my advisor and who taught me to be creative, attentive, and courageously lead me and make me done this work.”

ACKNOWLEDGEMENT

*All praises are for **ALLAH ALMIGHTY** who guides us in darkness and helps in difficulties. Infinite thanks to him who enabled me to complete this task. All the tributes to **HOLLY PROPHET MUHAMMAD (P.B.U.H),** the city of knowledge, torch of guidance who has guided his ummah to the knowledge from cradle to grave. I would pay bundle of Darood-o-salam to the Holly Prophet (salla-laho-alaihy-wa-alyhe-wasallum).This was possible only due to grace of Almighty **ALLAH,** Whose blessings are cherished fruit of our modest efforts to overcome the problems and difficulties.*

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May ***ALLAH*** *give them His blessings along happy life.*

FAISAL NAZIR

ABSTRACT

In this work different samples of wastewater were collected from sewage pipe of speed packages a printing and packaging industry near Band Road Daroghawala Lahore. Different experiments were taken place for the purpose of waste water analysis.It is very important to reduce or remove such harmful substances and heavy metals from flexographic printing wastewater before its removal into lakes underground water, ponds, river and streams.It was seen that effluents from flexographic printing industry have great and harmful side effects for human and animal especially for aquatic life. A number of diseases such as asthma, ageing, lung and kidney diseases and disorder of central nervous system before treatment flexographic printing based polluted waste water possess greater amount of suspended particles 1940 mg/L, dissolved solids 2170mg/L, high conductivity 1033 μS/cm, chemical oxygen demand 956 mg/L, biological oxygen demand 145 mg/L and high pH 7.91 and reasonable amount of heavy metals iron1.8 mg/L, Lead 11mg/L and zinc 7 mg/L. In this work water was treated to reduce above discussed parameters and heavy metals by using wheat straw, rice husk, animal charcoal and mixture of them. After the treatment, all of material shows different values but Animal charcoal show result of Ph=7.58, conductivity (353μS/cm), Total Hardness (356mg/L), Total Dissolved Solid (356mg/L) Total Suspended Solid (430mg/L), Chemical Oxygen Demand (167mg/L) and Biological Oxygen Demand (334mg/L)heavy metals iron 0.6 mg/L, Lead 3.2 mg and zinc 2.1 mg/L. In all these treatmentsanimal charcoal show good results than others.

CONTENT

CHAPTER No.1

INTRODUCTION

1.1 Introduction to Flexographic Printing

Flexographic printing technique is used in graphics and packaging materials like foil paper and cardboard through method of high speed rotational roll on roll printing. A simple printing plate is used in this technique for the purpose of printing form. By using a satisfactory cylinder with specific height and compressibility printing plate is mounted on the printing cylinder. A steel alloy cylinder known as anilox roll which is coated with chromium metal, throw a certain quantity of printing ink through ink container on high elevated portion of the plate. This specific quantity of printing ink is the dip volume and is explained by the angle, volume and lining of the engraved cells. Dipped volume is measured in m^2/cm^3. Adoctor blade is used for removing extra ink before cylinder wet the plate with linear layer thickness. Afterwards, printing ink is transfer from the plate on the substrate(Lorenz *et al.* 2015).