ODOR CONTROL IN WASTE WATER TREATMENT PLANTS IN EGYPT

A Thesis
Submitted to the Faculty of Engineering
Ain Shames University for the Fulfillment
of the Requirement of M.Sc. Degree
In Civil Engineering

Prepared by

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DEDICATION

I wish to dedicate this work to whom suffered to educate, prepare, build capacity and help myself to be as I am,

TO
MY FATHER
&
MOTHER

Also thanks

TO MY SISTER

For her encouragement and support to complete this work.

STATEMENT

This dissertation is submitted to Ain Shams University, Faculty of Engineering for the degree of M.Sc. in Civil Engineering.

The work included in this thesis was carried out by the author in the department of Public Works, Faculty of Engineering, Ain Shams University, from September 2007 to July 2010.

No part of the thesis has been submitted for a degree or a qualification at any other University or Institution.

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others

Date: - ---/-- /2010

Signature: - ----------

Name: - ***FATMA AKL MOSTAFA MOHAMED***

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ABSTRACT

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Abstract:-

In The Paste, Odor control works was considered to be luxury and complex issue in Egypt but now after knowing the important of eliminating odor to human and environmental health, Egypt started to apply it. One of the starting projects to apply the odor control system are in the **KAFER ABU ALY** Pump Station, Kafr El Shiekh Governorate, by using mixture from water spraying with air diffusers and activated carbon in one system.

The study had evaluated this system that had been applied in this pump station to solve the problem by reducing the emitting of H_2S, or other odors ,the evaluation has take in consideration both price ,existing area and odor control effectiveness.

The study was done during six months before project execution and another six months after project startup. Hereafter an illustration for the evaluation results and discussions showing all the varieties appeared and the system ability to improve and control the odor in the site of pump station and its neighboring area.

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INTRODUCTION

1.1 GENERAL

waste water treatment plants often contain odors compounds that can escape from open channels and tanks in the preliminary treatment system ,in warms weather screenings and incompletely washed grit can develop obnoxious odors this odor may contain numerous components including hydrogen sulfide(H_2S)ammonia(NH_3)carbon dioxide(co_2),methane(CH_4)and other components which is harmful for residents

Therefore, it is becoming more and more necessary for wastewater professionals to manage and control odors before the neighbors notice but odors aren't simply an issue of bad public relations. Most wastewater professionals are now faced with learning all they can about odor control and finding someone who can solve their odor control problems efficiently and effectively.

In the past Egypt don’t take consideration for such issue and consider it as – issue but now after studies they realize the important of such issue and is effectiveness on human health.

1.2 STUDY OBJECTIVE

This studies were made in KAFAR ABU ALY pump station they take in consider both price and odor control effectiveness that is why they use the existing sump in the plant as spry tower and added layer of activated carbon odors are caused by compounds such as hydrogen sulfide ((H_2S),methyl merceptan, and carbonyl sulfide (COS)

1.3 SCOPE OF WORK

1.3.1LITERATURE COLLECTION AND REVIEW

- Introduction
- Information about odor control techniques
- Information about odor control Methods
- Information about sources of odor
- Information about odor control measures
- Information about application of methods
- Information about factor affect odor control

1.3.2EXPREMENTAL PROGRAM

- This application work as spry tower.
- The study measures pH, TSS, Cl2-, SO4, NO3, NH3, BOD, COD H2S, TSS, NH3 and CH4 in sewage and air.
- The analysis was monthly measured for all the parameters.

1.3.3RESULTS ANALYSIS&DISCUSSIONS

- Discussion the results for all the parameters.
- Evaluate the application
- Make the required modifications that are possible to improve the efficiency.

CHAPTER II
LITRATURE REVIEW

2.1 INTRODUCTION

As populations and communities continue to grow and expand, the need to treat wastewater means more facilities near homes. So, out of sight, out of mind doesn't work anymore. Years ago, wastewater treatment plants were located far away from communities, and odor was only a problem for those at the facility. Now, with new home developments booming and urban growth extending into even the most remote areas, it has become an issue in all communities.

Smell is one of the most sensitive of our senses. This means that people can readily detect almost any odor in their surroundings. Now that many wastewater treatment plants are being surrounded by neighborhoods, the potential for complaints, bad community relations, and hard feelings is immense and growing .Once neighbors become sensitized to odors, any odor event no matter how small or how short in duration will trigger complaints. Therefore, it is becoming more and more necessary for wastewater professionals to manage and control odors before the neighbors notice but odors aren't simply an issue of bad public relations. The same compounds that create these odors can also corrode and damage treatment plants and collection systems it is important to be proactive to address corrosion, to prevent negative images of the facility, and to avoid a crisis situation by allowing time to implement the appropriate solution. Most wastewater professionals are now faced with learning all they can about odor control and finding someone who can solve their odor control problems efficiently and effectively, Wastewater-related odors typically develop in the liquid phase very early in the treatment process during its collection and transport to the treatment plant, While traveling through sewer lines, wastewater can become anaerobic (the dissolved oxygen can become depleted) as a result of the bacteria commonly found in wastewater. Under anaerobic conditions, certain types of bacteria generate hydrogen sulfide (H_2S) as a byproduct. Unfortunately, H_2S, because of its composition, easily escapes from wastewater and moves into the air the vapor phase. It is recognized by its strong, offensive, rotten egg odor **[1],[2],[3]& [4]**.