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Design Parameters for Treatment of Samaru -Zaria Slaughter House Wastewater.

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ABSTRACT

Composite samples of wastewater from the Samaru-Zaria slaughterhouse (SZSH) were collected over a period of thirteen weeks and analysed in the laboratory for the purpose of obtaining information needed for the design of treatment processes to control and abate the inherent pollution to its immediate environment. The wastewater characterization analysis revealed that the wastewater from SZSH has ample presence of nutrients, low to medium concentrations of chloride, phosphate and suspended solids, and no biological inhibitors, signifying that the SZSH wastewater is biologically treatable. These data on the pollutants concentrations from these abattoir wastewaters were statistically analysed and used illustratively to design a cost-effective wastewater treatment process that can be easily operated and maintained.

1.0 INTRODUCTION

Over the years, livestock slaughtering, as a small scale industry has grown in Nigeria due to the nation's dependence on livestock products for their daily protein requirements. The wet processes involved while slaughtering consumes a lot of water, subsequently generates volumes of wastewater and may consequently threatened their immediate environment if not properly handled. Presently, the wastewater generated from most Nigeria abattoirs are haphazardly disposed around the environment where they are located across the country because of the little or no concern shown by most of their handlers and stakeholders.

The institutional and technical framework for combating environmental pollution threats in the nation as provided in the laws was previously supervised by the defunct Federal Environmental Protection Agency (FEPA) and now handled by the recently created Federal Ministry of Environment. In the past years, they have helped to initiate and implement a number of frameworks towards abating and controlling environmental pollution in Nigeria. This positive concern for environmental protection at the national level is seriously challenging the abattoir industries, as well as other industries generating highly polluted industrial wastewater, to put in place all necessary measures to minimise or eliminate the impact of their wastewaters on their immediate

environment.

One major approach towards minimising the effect of this polluted industrial wastewater is to characterize them, as suggested by Metcalf and Eddy (1979), Eckenfelder (1991) and Casey (1992), to obtain useful information for the design of a cost-effective treatment process or processes that will be needed to remove the pollutants from such wastewater. This study therefore aims to characterize the wastewater from Samaru-Zaria slaughtering house and obtain some preliminary design parameters to design a cost-effective treatment process as a case study for the abattoir industry.

There has been a growing attention given over the years to the development of biological treatment processes in the removal of pollutants from wastewaters arising from domestic, municipal and industrial activities. This attention towards the use of biological treatment processes has remained because of the low capital, operational and maintenance costs of their systems (Somiya and Fujii (1984), Casey (1992) and Oke (2001). It will therefore be favorably considered and focused in this study.

This study therefore aims to characterize abattoir wastewaters and present all the parameters needed for the biological-process design in terms of its probability of occurrence and standardized value