Characterization And Teatment of Kitchen Wastewater Using Biomaterial

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Abstract- *Wastewater treatment is key infrastructure for ensuring a proper protection of our environment. Nowadays many water resources are polluted by so many resources like household, industrial waste. Public concerns over the environmental impact of wastewater pollution have increased. The second most is disposal of wastewater is from kitchen after Industries. The kitchen waste contains contaminants, chemicals, heavy metals, degradable and non-degradable wastes. Several wastewater treatment techniques are conducted to remove the waste from the contaminated water. The main purpose of this treatment process is to remove the various constituents of the polluting load: solids, organic carbon, nutrients, inorganic salts, metals, pathogens by treatment with biomaterial. Effective wastewater collection and treatment are of great importance from the standpoint of both, environmental and public health. This Wastewater treatment operation is done by various methods in order to reduce its water and organic content, and the ultimate goal of wastewater management is the protection of the environment in a manner commensurate with public health and socio-economic concerns. This study focuses on the effectiveness of the kitchen wastewater treatment systems using low-cost natural fiber of banana trunk as biofiber to remove pH, Chlorides, BOD, COD and turbidity from kitchen wastewater.*

I. INTRODUCTION

GENERAL

Wastewater is a term that is used to describe waste material that includes industrial liquid waste and sewage waste that is collected in towns and urban areas and treated at urban wastewater treatment plants. Wastewater is affected by domestic, industrial and commercial use, thus constantly changing its composition and making it rather difficult to define it. Wastewater treatment is any process that separates and removes contaminants from waste waters, or effluent. These contaminants include oils, dissolved heavy metals, suspended solids and organic compounds. Either the local municipality or the Federal Government regulates the specific contaminants. A series of limits are set to determine the suitability for discharge. These limits must be met for the water to be legally discharged. If these limits are not met, the water must be pre-treated before being discharged, to remove the majority of the regulated contaminants.

WASTEWATER

Wastewater is affected by domestic, industrial and commercial use, thus constantly changing its composition and making it rather difficult to define. Wastewater that is discharged to the environment without suitable treatment can cause pollution. In developing countries and in rural areas with low population densities, wastewater is often treated by various on-sites anitation systems and not conveyed insewers. Waste water (or waste water) is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities. Therefore, wastewater is a by-product of domestic, industrial, commercial or agricultural activities. The characteristics of wastewater vary depending on the source. Types of wastewater include: domestic wastewater from households, municipal wastewater from communities (also called sewage) and industrial waste water. Wastewater can contain physical, chemical and biological pollutants.

WASTEWATER CONTAMINANTS

Wastewater contains heavy metals and potentially hazardous wastes. These can contaminate a waterway if left untreated and affect invertebrate. Ground and surface waters may be contaminated if their assimilative capacity is exceeded or contaminants are flushed down the drain. Treatment plants that purify water to a high standard (tertiary treatment) can minimize the risks of harm to waterways. However, decomposing waste in landfills (Kitchen waste) generates methane, a harmful greenhouse gas. Landfills also can produce leach ate which can escape into waterways when rainfall picks up heavy metals and decomposing organic wastes.Kitchenwasteisacomplexmixtureofchemicals,withmany distinctive chemical characteristics. These include high concentrations of ammonium, nitrate, nitrogen, phosphorus, high conductivity (due to high dissolved solids), high alkalinity, and also Total dissolved solids, arsenic, copper,

cadmium, lead, mercury, nickel and zinc. Information on boron was also included as it is an emerging contaminant.

WASTEWATERTREATMENT

Wastewater treatment is a process used to remove contaminants from wastewater or sewage and convert it into an effluent that can be returned to the water cycle with minimum impact on the environment, or directly reused. The treatment of wastewater is part of the overarching field of sanitation**.** Wastewater treatment, also called sewage treatment**,** the removal of impurities from wastewater, or sewage, before they reach aquifers or natural bodies of water such as rivers, lakes, estuaries, and oceans. Since pure water is not found in nature (i.e., outside chemical laboratories), any distinction between clean water and polluted water depends on the type and concentration of impurities found in the water as well as on its intended use. In broad terms, water is said to be polluted when it contains enough impurities to make it unfit for a particular use, such as drinking, swimming, or fishing. Although water quality is affected by natural conditions, the word pollution usually implies human activity as the source of contamination. Water pollution, therefore, is caused primarily by the drainage of contaminated wastewater into surface water or groundwater, and wastewater treatment is a major element of water pollution control. Biomaterial – BANANAFIBRE

Banana is an herbaceous plant of the genus Musa spp. of the family Musaceae and cultivated primarily for its fruit. For this study, raw banana trunk was collected from a plantation. Nodes of the raw banana trunk were first removed and the remaining parts were cleaved in longitudinal direction to thin slabs, with 20-30 cm in length, by the slicer. After cut into pieces, the banana trunk was washed with tap water to remove dust and dirt. Furthermore, the banana trunk was dried under sunlight before been dried in an oven for 24 hours at105°C.

II. OBJECTIVES

- To characterize the kitchen wastewater.
- To use a biomaterial (Banana fiber) for treating kitchen wastewater
- To study the effectiveness of banana fiber in removing contaminants from Wastewater.

III. TESTING OF SPECIMEN

PH

pH tester is a device or tool used to determine the pH of a particular plot of soil, source of water, or nutrient solution. Soil and water pH can either be neutral, acidic, or alkaline. pH testers determine the acidity or alkalinity of soil and water. pH testers are available commercially in a wide variety of complexity range.

- The pH value of kitchen wastewater is =7.30.
- The pH value of Drinking water is =7.
- As per IS10500 the pH value of given sample is recommended for drinking.

TURBIDITY

Turbidity is the cloudiness or haziness of a fluid caused by large numbers of individual particles that are generally invisible to the naked eye, similar to smoke in air. The measurement of turbidity is a key test of quality. Turbidity (or haze) is also applied to transparent solids such as glass or plastic. In plastic production, haze is defined as the percentage of light that is deflected more than 2.5° from the incoming light direction

IV. CONCLUSION

Kitchen wastewater that is discharged to the environment is one of the contributing factors to water pollution. Various techniques have been employed to remove the pollutants namely, physical, chemical and biological treatment. This study focuses on the effectiveness of the kitchen wastewater treatment systems using low-cost natural fiber of banana trunk as biofiber to remove COD, ammonia nitrogen, suspended solids, turbidity, color, and oil and grease from kitchen wastewater. The study reveals that the banana fibers could be acceptable for efficient removal of organics and nutrients present in the kitchen wastewater.

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