

Management of Wastewater in Sugarcane Industry

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Abstract – Wastewater from sugar industries is one that has complex characteristics and is considered a challenge for environmental engineers in terms of treatment as well as utilization. Before treatment and recycling, determination of physicochemical parameters is an important mechanism. The main aim of this study is to determine the physicochemical characteristics of sugar industry waste water by the standard method and minimize the fresh water consumption in sugar industry by new method/technique. The consumption of large volume of water and generation of organic compound is liquid effluent are major environmental problems in sugarcane processing industry.

Keywords – Sugarcane industry, effluent management, treatment..

I. INTRODUCTION

Sugar industries have an important place in the Indian economic development. The waste water generated from these industries bear high degree of pollution load. Waste water from sugar industry, if discharge without treatment, poses pollution in both aquatic and terrestrial ecosystems. Sugar industries in India generate about 100 liters of waste water for 1-ton sugarcane crushed.

It is necessary to filtrate the waste water so that it can be reused for various purpose by applying the new method/technique in effluent treatment plant. By analysis existing data we should come to conclude that the waste water from sugar factory can be treated to minimize the pollutants in the waste water and it can be reuse for various purposes.

Sugarcane industry generates 0.2-1.8 m³ per ton waste water with COD 1800 to 3200mg/l, BOD 720- 1500mg/l. Sugar wastewater if disposed off into the water bodies untreated, can contaminants surface and subsurface water. The BOD/COD causes rapid depletion of oxygen content of the waters, creates fousl smell renders the stream unfit for propagating aquatic life, drinking and for the purpose

II. LITERATURE REVIEW

1. Quality and Management of wastewater in sugar industry.

Wastewater from sugar industries is one that has complex characteristics and is considered as a challenge for environmental engineers in terms of treatment as well as utilization. The main aim of this study is to determine the physiochemical characteristics of sugar industry waste water.

2. Treatment of sugar industry wastewater by up-flow anaerobic sludge blanket reactor

Unmanaged organic waste fraction from industries, municipalities and agriculture sector decompose in the environment resulting in large scale contamination of land, water and air

3. Treatment of Sugarcane Industry Effluent: Science and Technology Issues

The agriculture sector of India has occupied 43% of India's geographical area, and is contributing 16.1% of India GDP. There are around 45 million of sugar cane growers in India and a larger portion of rural laborers in a country largely upon this industry

III. OBJECTIVE

1. To investigate water demand and sources of waste water generated form sugar industry
2. To examine various process and stages of effluent treatment plant.
3. To collect the composite sample and its analysis to check the quality of effluent treatment effluent.
4. To provide practical suggestion to reduce and reuse waste water.

IV. EXPERIMENTAL INVESTIGATION

1. Selecting Parameters for Industrial Survey:-

There are many parameters that can be retreated, reuse in the industries but the main wastage that can't be treated as it can be reuse in efficient amount. These factors will be finalized on the basis of following factors:

- International
- Journal Papers
- Interviewing Environmental Engineer

2. Methodology



Fig .1.Methodology Flow Chart.

3. Materials required

- Fluid- air and effluent
- Solid- polypropylene beads of 6 mm diameter
- Microorganism

Different setup for different mode of fluidization 2 phase or 3 phases. Two phase inverse fluidizations are carried out by only the flow of liquid. Three phase inverse fluidizations can be carried out in two ways i.e. continuous mode and batch mode. In batch mode solid particles fluidized by passing only gas from the bottom there is no net flow of liquid occur. But in continuous mode both liquid and gas contribute in the fluidization of solid particles. In batch mode waste water is stored in the column first and then gas is passes from the bottom for fluidization to occur. Measurement of different parameters is done by taking some amount of sample from the discharge end and tests are carried out. In case of continuous mode simultaneously there will be liquid flow and gas flow.

4. Processing of Data: -

In processing of data, we collect the sample of untreated sugarcane wastewater by visiting the sugarcane industry.

- Tests carried out on effluent sample
- Biochemical oxygen demand (BOD)
- Chemical oxygen demand (COD)
- Chlorides
- ph

- Sulphates
- Total solids

Table -I: Test on water

Sr. no	parameter	Unit	Values	method
1.	pH	5.50	pH meter
2.	Total suspended solids	Mg/lit	1255	Gravimetric method
3.	Total dissolved solids	Mg/lit	1989	Gravimetric method
4.	COD (chemical oxygen demand)	Mg/lit	4210	Titrimetric method
5.	BOD (biochemical oxygen demand)	Mg/lit	1350	Dilution method
6.	chlorides	Mg/lit	540	Mohr method
7.	sulphates	Mg/lit	150	Gravimetric method
8.	Oil and grease	Mg/lit	<1.0	-
9.	Color	-	Dark brown	-

V. RESULT

By analysis existing data we should come to conclude that the waste water from sugar factory can be treated to minimize the pollutants in the waste water and it can be reuse for various purpose.

The outcome expected from this project is to get optimum water after the waste water treatment and it can be reuse which can be treated by advance technique.

VI. CONCLUSION

In the treatment of effluent of sugar industry by wastewater treatment we can minimize the pollutant and reuse the treated water for various purposes.

REFERENCES

- [1]. Pradeep Kumar Poddar, Omprakash Sahu, "Quality and management of wastewater in sugar industry" Vol. 5, No. 3, pp 1246-1253(November 2014).
- [2]. A.S. Tanksali, "Treatment of Sugar Industry Wastewater By Up flow Anaerobic Sludge Blanket Reactor" Vol. 5, No. 3, pp 1246-1253 (March 2013).
- [3]. M.Rais, A. Sheoran "Treatment of sugarcane industry effluent: science and technology issues." Vol. 5, pp 11- 19 (January 2015).
- [4]. D. Shivakumar, S.Srikantswami "Evaluation of effluent Quality of a Sugar industry by using chemical parameters". Vol. 4, No.1, pp 16-25 (January 2015)
- [5]. Sanket D. Awsare, Harshavardhan Bhosle, Nita P Chavan "Effluent treatment plant of sugar waste water review." Vol. 1, No.5, pp 102-107 (December 2015)