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Physico-chemical analysis of effluents of Sri Ram Paper Mill, Forbisganj, Araria

Rupak Kumari^a & Binod Kumar Jaiswal^b

^aDepartment of Botany, B.N.M. University, Madhepura, Bihar, India

^bDepartment of Botany, R. M. College, Saharsa, Bihar, India

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Abstract : Present study reveals that Sri Ram Paper mill, Araria causes high water pollution. The effluent contains of straw, cellulose fiber and dissolved lignin in addition to a complex mixture of chemicals are the cause of pollution. TDS, BOD and COD of the effluent were recorded as 3000mg/l, 1075mg/l and 7825 mg/l respectively.

Key words: Effluent, TDS, DO, BOD, COD.

INTRODUCTION

Sri Ram Paper mill was setup in 1992. It covers an area of about 2.5 acres. This industry has both pulp and paper production unit and produces strong brown wrapping paper, bag making papers, paper board used for cartons, corrugated boards, containers and strong white paper form bleached Kraft.

This Paper mill discharges large amount of waste water of paper manufactured having very strong colour, high BOD, high COD, high suspended solids and high pH. Crude paper and pulp waste causes very serious pollution consequences. This affects the survival, mortality and growth rate of fish present in tank of the effluents.

MATERIAL & METHODS

Waste water samples from effluent was collected in 1 liter plastic bottles and preserved for laboratory analysis

as per standard procedures recommended in APHA (1975). The preserved samples were brought to the laboratory and were kept at 4°C in refrigerator before the start of chemical analysis. The time interval between collection, storage and analysis was intentionally shortened to avoid any major change in chemical characteristics of the sample.

Estimation of four physical parameters and five chemical parameters were performed. Among physical parameter colour, odour, temperature and pH were estimated and among chemical parameters TDS, DO, BOD, COD and Chloride were estimated as per the standard procedures recommended in APHA (1975).

RESULT

Colour

Almost all industrial effluents were coloured, highly disagreeable odour, turbidity high BOD and COD value.

Odour

The odour of investigated industrial effluents was of disagreeable odour, which in an important physical parameter.

*Corresponding author :

Phone : 8207620024

E-mail : rupak852201@gmail.com

COD

It is much useful in finding out the pollution strength of industrial effluent. COD value of this paper mill was recorded as 4825mg/l.

Total Dissolved Solids

Determination of dissolved solids is useful in deciding the mineral content of effluent. The present investigation revealed the presence of 2800 mg/l total dissolved solid.

Dissolved oxygen

The measurement of dissolved oxygen indicates the purity of effluents and is important for maintaining aerobic condition in the system and in the treatment of industrial waste waters. The value of dissolve oxygen was nil in the effluent.

BOD

It is test of great value in the analysis of industrial effluent. BOD is the quantity of oxygen required by bacteria and other microorganisms, during the biochemical degradation and transformation of organic matter under aerobic condition. The value BOD was recorded 1075mg/ l (5days at 20°C)

pH

pH was measured using digital pH meter in the laboratory.

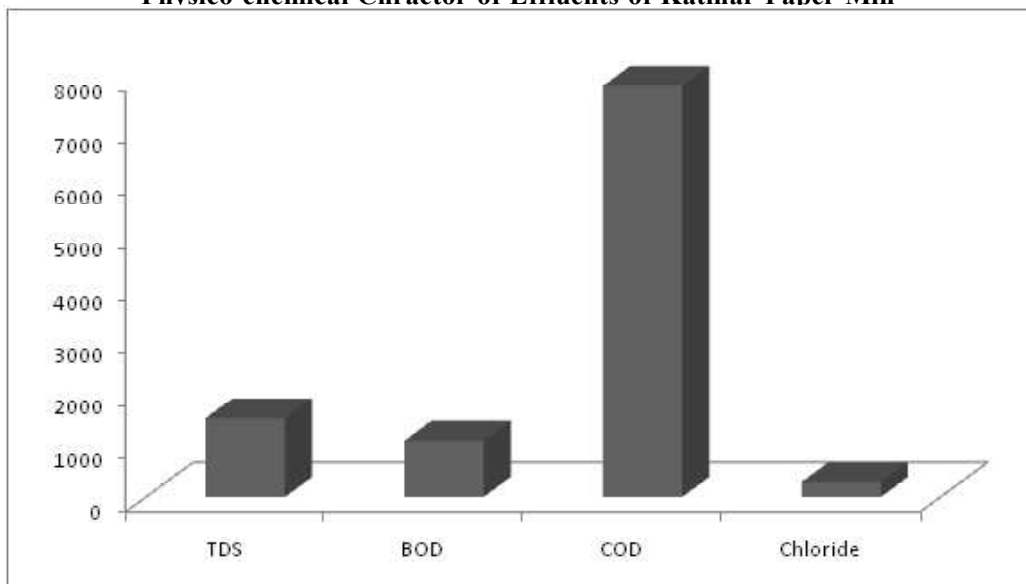
Chloride

Chloride is the common anion found in the industrial effluent. The chloride value of effluent of this paper mill was analysed to 282 mg/l. the physico chemical analysis is mentioned in table- 1.

Table 1:- Physico chemical characteristics of effluents of Sri Ram Paper Mill, Araria

| Parameters | Value | Tolerance Limit ISI |
|-------------------------------|---------------------|---------------------|
| Colours | Dark Brown | Should be Absent |
| Odour | Highly disagreeable | Should be Absent |
| Temperature | 41 ⁰ C | 31 ⁰ C |
| pH | 7.8 | 5.5- 9.0 |
| Total Dissolved Solids (mg/l) | 3000 | 1690 |
| Dissolved oxygen | Nil | 5.8 |
| BOD (mg/l) | 1075 | 29 |
| COD(mg/l) | 4825 | 225 |
| Chloride (mg/l) | 282 | 30 |

Physico-chemical Chractor of Effluents of Katihar Paper Mill



CONCLUSION

Present study reveals that Sri Ram Paper mill causes a great amount of water pollution. The effluent contains of straw, cellulose fiber and dissolved lignin in addition to a complex mixture of chemicals. About 50% of the raw material used for the process is rejected as waste material (Manivasakam, 1984). This fact is evident by studying the physico chemical analysis of effluent of the paper mill. The effluent had total dissolved solid, BOD, COD, and high amount of Chloride.

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