

# EXTRACTING HEAVYMETALS USING NATURAL COAGULANT AND INFLUENCING OXYGEN DEMAND IN ROTATING BIOLOGICAL CONTACTOR METHOD

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## ABSTRACT

Rapid urbanization and industrialization in developing countries like India pose severe problems in collection, treatment and disposal of effluent. A number of Industry waste water plays an important role and also pollute the environment. We can extract heavy metals in the industrial waste water. Biological treatment is applied to that waste water.The advanced biological treatment RBC(Rotating biological contactor) is adopted.The RBC process involves allowing the wastewater to come in contact with a biological medium in order to remove pollutants in the waste water.A rotating biological contactor is a type of secondary treatment process. Coagulation is one of the most widely used for wastewater treatment,as it is efficient and simple to operate.The natural coagulants like cow dung, wood ash,moringa seed powder are used to remove heavymetals in the industrial waste water.It is bio-degradability, safe for human health,environmental friendly and produce no secondary sludge.

**Keywords: RBC, Cow dung, Wood ash, Moringa seed powder, Natural coagulant, Textile raw water**

## 1.INTRODUCTION

The increase in urbanization results in growth of industries causing increase in pollution of environment. The waste water released from the industries are discharged directly into water sources leading to higher pollution rate.The textile industries use dyes and pigments to colour their products. These are the main source of waste water generated during dyeing and finishing stages. When these coloured effluents enter rivers or any surface water system they upset biological activity, aquatic ecosystem, agricultural growth.

Hence the land irrigated with textile effluent acts as sink for heavy metals and other chemicals consequently reduces soil fertility. The textile effluent contains high level of iron and carbonates which causes stain in plants. The water irrigated for the agriculture should satisfy the standard values for irrigation. It also depends upon the type

of crop, nature of soil, climatic conditions etc.,The conventional water treatment process such as coagulation, membrane separation, and electrochemical, reverse osmosis suffers from one or more limitations for complete removal of dye. Now-a-days special attention has been focussed on the rise of natural adsorbents based on environmental and economic point of view. This project aims at the use of natural product which is easily available to treat the waste water. Due to their high carbon content and hardness, wood ash,animal waste and drumstic seed powder are the excellent raw materials to extracting heavymetals and influencing oxygen demand. The major advantage of this method is simplicity,low energy and less land requirement.

## 2. Objectives

- To provide environmentally safe water for agricultural purpose.

- To remove colour, odour, turbidity from the waste water.
- To reuse the waste water.
- To extract heavymetals using natural coagulant.

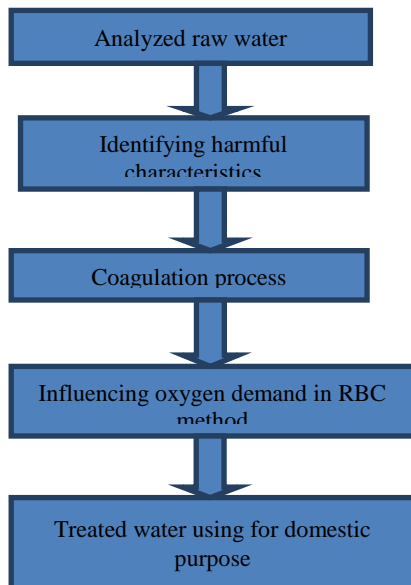
**3.1 Effects of Textile Effluent on Agriculture**

- High pH results in soil infiltration and permeability problems.
- High levels of iron and carbonate cause stain in plants.
- Low salinity water causes the soil impermeable.
- Increased turbidity affects the levels of photosynthesis.
- Increase in temperature increases the rate if algae nitrate concentrations results in unpleasant odour and taste of water.

**3.2. Effects of Textile Effluent on Environment**

- The colloidal matter present along with the colours and oily scum increases the turbidity, gives foul smell.
- High levels of toxicity due to the presence of nickel, mercury, cadmium etc.,

**4. Methodology**



**5. Materials**

- Textile raw water
- Cow dung
- Wood ash
- Moringa seed powder

**6.RBC Process**

- Take the samples and analysing the pH, turbidity, alkalinity after that the sample is filled in the different beakers and is placed in jar test apparatus.
- The coagulants like cow dung, wood ash, moringa seed powder are added in the samples (10 ml,15 ml,20 ml),(10 gm/150 ml) and after that the paddle is rotated in 100rpm,15 minutes allow the rotation process.
- After that the process is stopped and allow solids settle for 10 to 15 minutes. The clear water appear in top portion. To take this clear water and analysing the turbidity

**Table.no:1 Comparison table for various coagulant**

Material	Dose of coagulant	Turbidity (NTU)
Cow dung	10 ml	41.9
	15 ml	42.3
	20 ml	45.3
Wood ash	10 ml	19.4
	15 ml	21.2
	20 ml	23.5
Moring seed powder	10 ml	12.3
	15 ml	15.1
	20 ml	17.7
Cow dung+Wood ash+Moringa seed powder	10 ml	29.3
	15 ml	30.3
	20ml	32.1

## 7. Conclusion

Now a days the amount of wastewater is rapidly increasing due to increasing world's population. Therefore, better system is urgently needed to meet the standard effluent and in providing the volume needed due to the increase in flow and organic loading. In the present paper, used to remove toxic elements from aqueous solution using three natural materials- wood ash, cow dung and moringa seed powder. This method of coagulation process involves low cost. It is bio-degradability, safe for human health, environmental friendly and produce no secondary sludge.

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