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EFFECT OF WASTEWATER PH ON TURBIDITY

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Abstract: Turbidity is measured by the intensity of light scattered by the water sample. Higher the intensity produces higher turbidity. Turbidity actually refers to the cloudiness of a solution. It indicates the presence of TSS (Total Suspended Solids) like clay, silt, organic matter which are very harmful for mankind, biologically as well as chemically. They give an undesirable tastes and odours. Due to the adsorptive characteristics of colloidal solutions, disinfection of turbid water is not always possible. Turbidity refers to the cloudiness of a solution and its characteristics that are imparted by the suspended solid particles limiting the passing of light through water sample. Usage of natural products to reduce turbidity in a water sample is a technique that has been repeated from years, and the material used are safe and effective, like Rice husk, Ground-nut shells, very fine sand(300micron). These filter media can reduce the level of turbidity in the best way as it can (more than 60%). The materials are generally named as Bio-adsorbent which can remove turbidity from any sort of water sample.

Keywords: Blade parameters, cutting force, Sorghum stalks

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INTRODUCTION

A series of adsorption experiment were conducted to establish the reduction of turbidity.

After chemical treatment it's been found out that adsorption capacity of rice husk is increased. Treated rice husk attracted greater attention than untreated once, as a result of comparatively higher adsorption capacity favored by higher amount of active binding sites, improved ion exchange properties and enhancement of functional groups after chemical treatment.

The adsorbents with high adsorption capacity, easy separation from aqueous solution, low cost, and recycling use are promising materials in the future. Ground-nut shell has been used as a potential low-cost adsorbent material for the removal of various pollutants from water.

The Gravity Filter is one of the best techniques to remove turbidity, just by using fine sand and gravels, the turbidity can be removed to a higher extent without any extra effort or without any chemicals used.

1.2 Using Rice Husk as an Adsorbent

Rice Hull Ash are been popularly used as a very effective filter media which helps the filtration of solid as well as liquid systems of colloids, fine, highly compactible particular solids. RH are been used for different applications depending upon the physical and chemical properties of the rice husk. Ex- ash content, silica content etc. Use of rice husk as fuel are being used in power plants. Apart from this, RH is a source of raw material for synthesis and development of new compounds.

1.3 Using Grinded Ground-nut Shells

Ground-nut shells are also a very effective media in the filtration of turbid water. The Nano-meter size pores are very efficient in blocking the very minute dirty particles present in water and making it turbid.

1.4 Significance

In this we focused on the preparation of activated charcoal of rise husk and grinded particles of groundnut shell which are termed as waste. This cheap and abundant agricultural waste is converted into a very useful by-product that represents a source of adsorbent that will contribute to the waste water treatment problems.

2.1 OBJECTIVE

1. Removal of turbidity from water using low cost adsorbents

2. To remove turbidity from the water and to reuse it as much as possible.

3. To use activated carbon that can remove many impurities from the water, these by-product can also do the same task, not in accuracy but can go upto a higher extent and can improve the quality in less cost as compared to any other media.Cost adsorbent can be made from agricultural wastes such as fruit peel, sugarcane and peanut shell.

3. Material and methods

An attempt has been made to study the characteristics of waste product's adsorption techniques. For generalization of the experiment, first all the materials are collected from market and are been washed thoroughly so as to have a dust free environment. The effects of dust will hamper the solution and can give bad results. The analysis of every material is done to its best of its convenience and the results are carried out.

4. PROCEDURAL STEPS FOR MODELING

Three 2.5 liter cylindrical bottle was taken having a hole at the end for the water to come out. At the bottom of the bottle, fine sand of 300 micron is placed till 0.4 height of the bottle den fine gravels of 1.25 mm was placed over that and then 4.75mm gravels were placed on the top. In between every layer, filter paper was kept so as to separate it from each other and get a well setup apparatus. 2-3kg of Rice Husk is taken and washed with hot distilled water so as to remove the impurities and soil dust particles. Then it is dried under sun light to get a natural heat and good evaporation. After that, the RH was taken in 4 Crucibles of 100ml each and was burnt in Muffle Furnace at 800ºC for 3 hours for good burning. And after that Furnace was switched off, the crucibles were kept in it for the whole night to cool down and was taken out in the next morning for purification. 0.67 kg of groundnut shell was obtained from 2kg of ground nuts as a whole, and was washed with hot distilled water and dried under sun. Then it was grinded till it gets in powder form. And it is ready to use.

Fig.1Rice husk and its powdered form.

Fig.2 Muffle Furnace

Fig.3 Carbonized Rice Husk

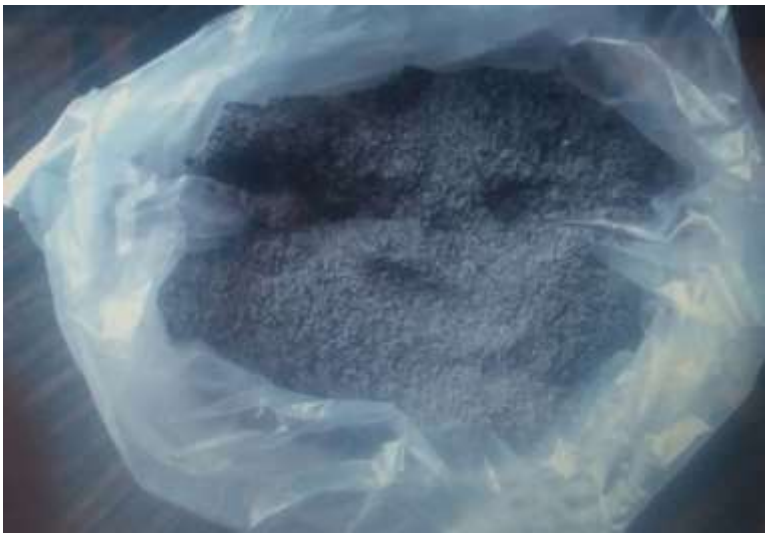


Fig.4 Experimental Setup

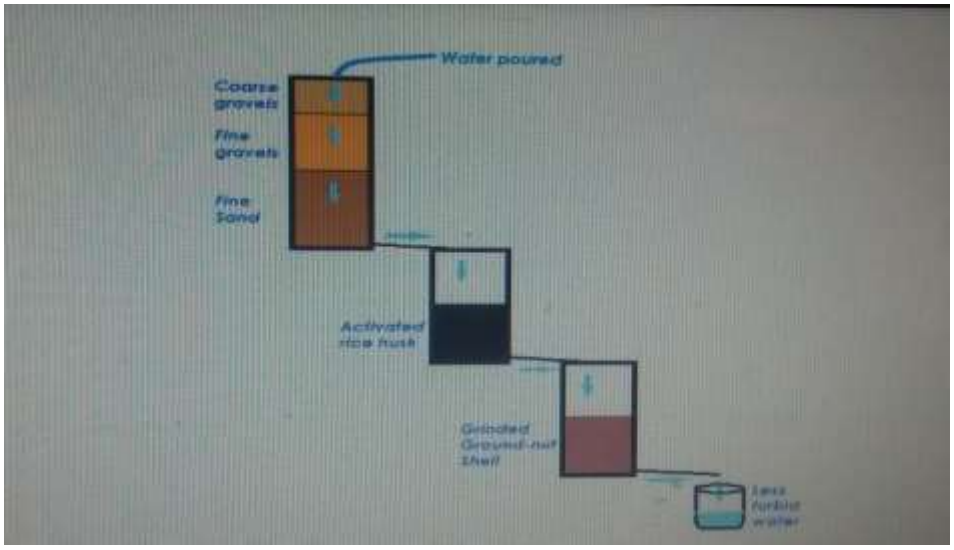


Fig.5 Lab Setup

5.1 PROCEDURE OF THE EXPERIMENT

A.1. In first case we take three test samples of turbid water one by one and pour them in equal amount to each one of the setup one by one.

2. In the first test sample case of Gravity sand filter, the gravels and sand can remove a lot of organic matter and dirt present in water.

3. The coagulation of dirt present in the water are easily removed by Sand at the 1st attempt. From this we can suggest that Sand is the best for removing coagulations from water.

4. In the next test sample step we use the Activated rice husk which is very porous and has the ability to stop the coagulants effectively.

5. The same sample is poured in it and the result is calculated.

6. Now the third test sample is poured in the grinded ground-nut shell.

7. In all of the 2 experiment same steps are produced and the results are tabulated

B. 1. Now in the second part, partially different procedure is applied.

2. Only one sample of the turbid water is first taken into consideration.

3. First the water sample is passed through the Gravity Filter then to the Activated Rice Husk and the at last to the Grinded Groundnut Shell.

4. Then the results are calculated

RESULTS

Tabulation:

Table no. 1

	Water sample	Origional concentration	After passing through gravity filter	After passing through activated rice husk	After passing through grinded groundnut shell
Turbidity	Passing the water individually	74.3	14.6	52.2	19.2
	Passing turbid water one after another	74.3	14.6	48.3	18.6
Temperature	Passing the water individually	23	22	37	20
	Passing water one after another	23	22	32	19.2
PH	Passing the water individually	8.06	7.09	8.01	6.5
	Passing water one after another	8.01	7.03	6.90	6.4
Hardness	Passing the water individually	110.5	105	148.3	100.3

	Passing water one after another	109	105	123.7	93.7

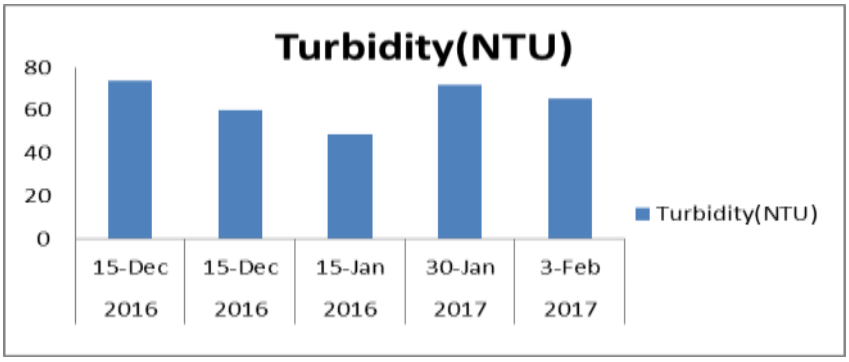
Table no. 2 (a) Value of PH and Turbidity

Sr. No	Year	month	PH	Turbidity(NTU)
1	2016	15 Dec	8.06	74.00
2	2016	15 Dec	7.09	60.01
3	2016	15 Jan	7.08	48.72
4	2017	30 Jan	6.90	72.02
5	2017	3 Feb	7.00	65.70

Figures:1

Graph of PH

Graph of Turbidity



CONCLUSION:

This study showed us that, according to the results obtained in this study, the rice husk should be treated before using it as because it contains a lot of impurities and release color pigment once being crushed to smaller forms. However untreated rice husk gave better result for different contact time which showed the high possibility to be used in adsorption process by modifying the rice husk to obtain optimum efficiency. Application of rice husk is beneficial in many areas by reducing cost of adsorption process and also in the biomass waste treatment. The gravity filter and Grinded Groundnut shell filter can remove turbidity to a greater extent.

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