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DEVELOPMENT OF WATER SOFTENING METHOD BY USING NATURAL ADSORBENT: TEMPLE WASTE

Kunal Nikam, Arshadshah Shaikh, Prof. R.B. Kesarkar

Students, Dept. of Civil Engineering, Imperial College of Engineering and Rese.
Prof., Dept. of Civil Engineering, Imperial College of Engineering and Rese.

Abstract - Nowadays, Heavy metals are the prime concern due to their adverse effects on the environment and human beings. It is discharged from various industries such as mining, metal finishing, electroplating, glass, textiles, ceramics, and storage batteries. Copper is the metal used in many electronic devices and involved in other production processes. On the other hand, the amount of floral waste generated from temples and festivals/celebrations are increasing day by day, its impact on the solid waste management process is huge and it creates a fouling smell when it is disposed of improperly. Therefore, the present aim of the project is to utilize the waste flowers for the development of Biochar where it is used in the removal of heavy metal i.e., copper from synthetic wastewater. The other advantage of floral Biochar is the increase in soil organic matter (SOM) which can influence the soil microclimate, microbial community structure, biomass turnover, and mineralization of nutrients. The preparation, physicochemical properties, and adsorption mechanisms of floral waste Biochar in removing copper metal from synthetic wastewater have been discussed in this study.

Key Words: optics, photonics, light, lasers, templates, journals

1.INTRODUCTION

Pune, a rapidly growing city in Maharashtra, faces challenges related to water quality due to increasing industrialization and urbanization. The hardness of water, primarily caused by high concentrations of calcium and magnesium ions, is a common issue in Pune. Hard water can lead to scaling in pipes, reducing their efficiency, and causing various operational problems in industrial and domestic settings.

Globalization have brought rapid advancement in the growth of industries at the same time also inflicts serious damage to environment.

Ground water contain heavy metals, metalloids, and organic pollutants that can cause severe damage to the soil and water systems.

Heavy metal pollution into the water is one of the never-ending issues that pose a serious threat to human health and the environment.

2. OBJECTIVE

To study various material (Durva, Belpatra, Hibiscus flowers, Marigold Flower, Dhotra Flower) which is act as natural adsorbent.

To Prepare filtration model by using natural adsorbent and filter media for the treatment of ground water.

To study the physical-chemical parameters of treated water.

Comparative study between conventional method (Activated) and natural method (floral waste).

3. PROBLEM IDENTIFICATION AND NEED FOR SOLUTION

Temple waste creates huge waste generation which is a major concern and its utilization is not done properly.

This floral waste & other organic waste is directly preferred for open dumping or in river which pollutes the water as well as ground water table.

To overcome all this problem we will try to use the waste as adsorbent to provide economical solution for ground water treatment.

4. SCOPE OF THE WORK

This Treatment we are providing only for temple waste but if it is successful it can be further provided for MULA MUTHA.

Here we are providing treatment for ground water but further we can implement for heavy metals as well.

5. METHODOLGY

- Local Survey
- Collection of Samples
- Preparation of Charcoal
- Chemical testing of Charcoal
- Preparation of Filter Model
- Physio-Chemical Analysis Of Water
- Result
- Conclusion

Fig. no. 1:- Collection of sample

Firstly we collected the samples from different temples which includes Aegle Marmelous (Belpatra),Durva ferox L., Datura, Marigold Flower.

Fig -2: Temple Location(Wagheshwar Temple)

Fig -3: Temple Location(Ram Temple Wagholi)

Fig -4: Temple Location(Hanuman Temple Wagholi)

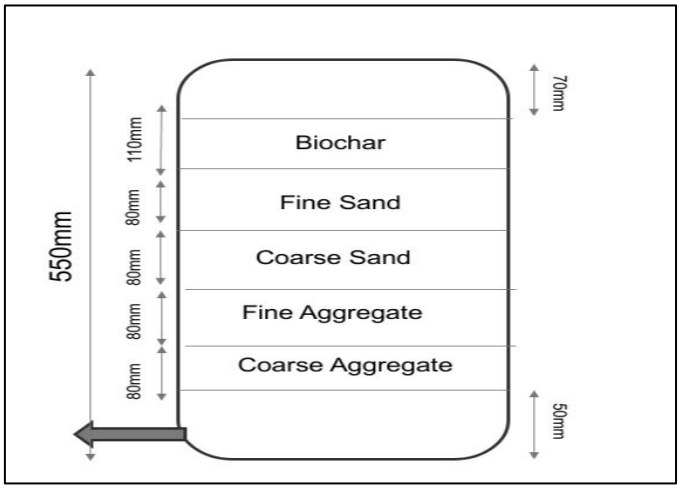

Fig -5: Filter model

6. RESULT

Sr No.	Wt. Of Sample	Temperature (°C)	Ash Content (%)
1.	20gm	200°C	17.159
2.	20gm	300°C	10.161
3.	20gm	350°C	7.217
4.	20gm	450°C	5.763
5.	20gm	600°C	5.738
6.	20gm	700°C	3.948

Fig -6: Ash content obtain at different tempreture

Fig -7: Biochar Obtain

Chlorides							
Sr. No	Sample Type	Initial	Concentrated HCl	Concentrated H2SO4	Diluted HCl	Diluted H2SO4	Natural
1.	Tap water	65	20.65	61.96	56.45	60.23	62.48
2.	Synthetic Sample	252	123.93	145.26	180.21	189.41	249.94

Hardness						
Sr. No	Sample Type	Initial	Concentrated HCl	Concentrated H2SO4	Diluted HCl	Diluted H2SO4	Natural
1.	Tap water	222.6	133.34	148.76	170.38	165.47	197.84
2.	Synthetic Sample	630	518.15	548.51	331.85	380.21	621.35

Fig -8: Results obtain (Hardness & Chlorides)

7. CONCLUSIONS

The results suggest a define and sustainable alternative to traditional water softening Biochar preparation.

As temperature increases, Ash content decreases to avoid the ash content & to obtain only carbon, we have done pyrolysis in presence of Nitrogen gas.

Parameters of water i.e chlorides and hardness reduces.

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