Proceedings of Conference on Advances on Trends in Engineering Projects (NCTEP-2019)
In Association with Novateur Publications IJIERT-ISSN No: 2394-3696
ISBN. No. 978-93-87901-03-2
February, 15th and 16th, 2019

PAPER ID: CE 109

REMOVAL OF TURBIDITY FROM WASTE WATER BY USING LOW COST ADSORBENTS A REVIEW

Sudarshan Kulkarni
Asst. Prof. Department of Civil Engineering
Dr.D.Y Patil College of Engineering and Innovation, Varale, Pune.
sudarshan.kulkarni@dypatilef.com

Sahil Kardile
BE, Department of Civil Engineering
Dr.D.Y Patil College of Engineering and Innovation, Varale, Pune.

Vivek Gopale
BE, Department of Civil Engineering
Dr.D.Y Patil College of Engineering and Innovation, Varale, Pune.

Sanket Patil
BE, Department of Civil Engineering
Dr.D.Y Patil College of Engineering and Innovation, Varale, Pune.

Rasika Surve
BE, Department of Civil Engineering
Dr.D.Y Patil College of Engineering and Innovation, Varale, Pune.

ABSTRACT: Water is a very important natural resource which is very important for our day to day life. The water reserves which are there are also getting polluted due various wastes. Turbidity is measure by intensity of light scattered by the water sample. Higher the intensity produce higher turbidity. Turbidity generally refers to the cloudiness of solution it shows the presence of total suspended solids like clay, silt, organic matter which are very harmful for mankind, biologically as well as chemically. They give an undesirable taste and odour. Due to adsorptive characteristics of colloidal, disinfection of turbid water is not always solutions possible. Use of natural products to reduce turbidity in water sample is a technique that has been repeated from many years and the material used are safe and effective, like Rice Husk, Ground- Nut S hell and very fine S and (300 Micron).

Keywords—Tu rbidity, Rice Husk,Fly Ash,Ground-nut shell,Filtration Test

I. INTRODUCT ION

Water is a important constituent of life on earth. Because of the latest advances in life the level of purity is degrading day by day mainly by the addition of number of particles, ions etc.These particles represent transport vehicle for undesirable chemical contaminants and potential disease causing microbial Pathogens (1). The removal of these particles materials become important to protect public health.The main key of water quality is to taste the level of turbidity. Environ mental pollution due to development in modern industrial practice is one of the most significant problems of this century (2). The contamination of water resources by hazardous pollutants has attracted much serious attention in the last few decades. Waste water pollution is one of the critical problems that the world is facing in these era (3). Water quality is extremely important because constant access to good quality water is n necessary for life as well as economy. Water is the major abundant natural resources of the ecosystem (6).

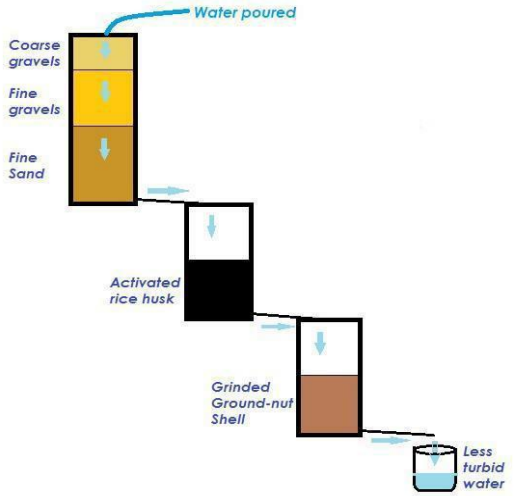


Fig-1 Filtration

Turbidity:

The turbidity of water depends on the proportion of the solid material in the water in the suspended state. If the suspended solid material is more the water becomes more turbid.

II.MATERIALS

A. Rice Husk:

Rice Husk 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 compatible particular solids. RH are has been used for different applications depends upon the physical and chemical properties of the rice husk. Ex- ash content, silica content etc. Use of rice husk as fuel in power plants. Apart from

this, RH is a source of raw material for synthesis and development of new compounds.

Fig-2 Rice Husk

B. Ground-Nut Shells:

Ground-nut shells are very effective media in the filtration of turbid water. The Nano-meter size pores are very efficient in b locking the very small dirty particles present in water and making it turbid.

Fig-3 Ground-Nut Shell

C. Fly Ash:

Fly Ash used as filter media and percolated waste water in fly ash filter med ia, In this research work provided two different thickness filter media of fly ash in module. Fly ash was collected from cement factory. Fly ash which is available in large scale at the coal fed electric power plants can be efficiently used for the treatment of domestic waste water.

Fig-4 Fly Ash

III. LITERATURE REVIEW

In this review they explained removal of turbidity in order to treat wastwater. Water is a universal solvent used in every single industrial process.Fluids can contain suspended solid matter consisting of particles of many different sizes. In this method they explained the operation of removal of turbidity method for treatment of wastewater. Removal o f turbidity method treats the wastewater in different ways i.e. pH, Temperature, Dose of adsorbent, Synthetic turbid solution, Shaking time etc. The result were obtained good enough so water treated used for domestic purpose [(1).]

In this review they said that remove turbidity in the form of suspended and colloidal part icles .By using the Moringa Oleifera,Okra, Calotropis Procera and Cassia Auriculata made them used as natural coagulants for the clarification of water Turbidity. The results are Natural coagulants have bright future, because of their abundant source, low price, environ ment friendly, multi functionality and their biodegradable nature in water purification [(2).]

In this review they have written an article on various effluent which polluted the water.Where all the living organisms in the environment require water for their growth and evelopment. There are various methods used for wastewater treat ment, they used fly ash like filter med ia like adsorbent. The result so obtained remove TS, BOD and COD [(3).]

In this review they used a technique to remove organic pollutants and fish to xicity in recieving water. The technoques are namely b iological treat ment, chemical precipitation,supecritical water o xidation and adsorption. The result is good enough low energy input and easy operation [(4).]

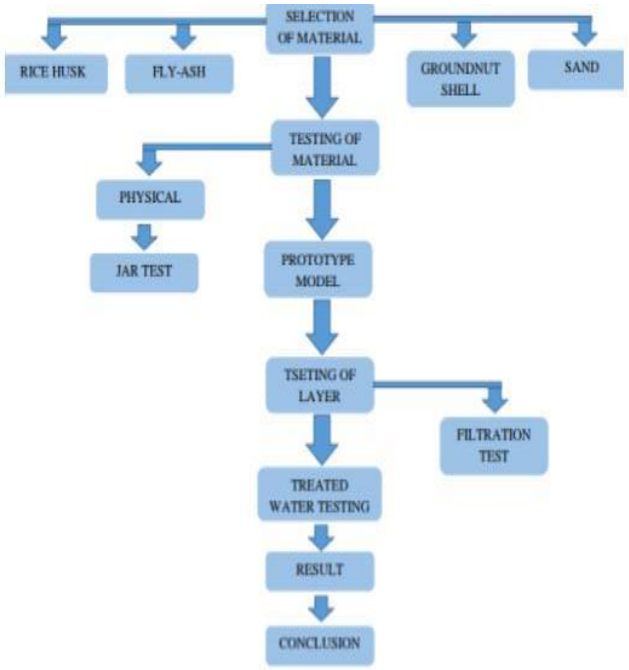
In this journal paper the used agro-waste as adsorbents. To remove the heavy metals from the efflunt. The operation done by using potato and banana peel as bio - adsorbent. The result was obtained good enough so water treated used for domestic purpose [(5).]

They have studied that the most challenging environmental problem is the removal of heavy metals and other toxic contaminants from wastewater. They treat the wastewater in different ways such as chemical precipitation, ion exchange, reverse osmosis, ultra filtration, electro dialysis and coagulation etc. The results are they improve the quality of treated effluent from toxic and hazards material (6).

In this review they constantly focus on the pure water to liv ing organism. In this rev iew they made a filter med ia by using the material like activated carbin, sand and grass mu lch. The results are significantly assist in the removal of BOD, COD, TSS, TDS, DO and Hardness (7).

This review is based on health problems caused by alu minimum salts. They removed the to xic elements from wastewater by conducting the operation like co mbination of bentonite-zeolite, bentonite-alim and bentonite-limestone. The results are found bentonite can be a good coagulant which can absorb COD 90.5% of removal (8).

IV. METHODOLOGY



V. LITERATURE OUTCOMES

Environmental regulations have become more stringent over the past two decades and requiring an imp roved quality of treated effluent for removing toxic and unhealthy materials to protection of environment and human health. Rice Husk, Fly ash, Groundnut Shell and Sand which are available in abundance can be efficiently used for treatment of domestic waste water.

REFERENCES

[1] Pro.A.Y.Talokar,S.V.Gupta(Effect of Waste Water pH on Turbidity) International Journal o f Pure and Applied Research in Engineerin and Technology,IJPRET,2017;volu me-6(2):216-223

[2] Pro.A.Y.Talokar,S.V.Gupta(Effect of Waste Water pH on Turbidity) International Journal o f Pure and Applied Research in Eng ineering and Technology,IJPRET,2017;volu me-6(2):216-223

[3] Nazia Fathima, Dr.Smita Asthana (Removal of Turbidity of Waste Water by Adsorption Technology) Vo l. 5, Issue 11, November 2016) IJIRSET(2319-8753)

[4] S. Ramesh, J. S. Sudarsan (Lo w Cost Natural Adsorbent Technology For Water Treatment) Vol. 9 | No. 3 |325 - 330 | Ju ly - September | 2016 ISSN: 0974-1496 | e-ISSN: 0976-0083 | CODEN: RJCORP

[5] M Gaouar- yadi ,K t izaoui (Efficient and eco-friendly adsorption using low cost natural sorbent in waste water treatment)Vol.23,May2016,PP.204-209

[6] Firas Hashim Kamar, M ihaela Emanuela (Heavy Metals: sources, health effects, environmental effects, removal methods and natural adsorbent material as low-cost adsorbent)Vol.4, No.2,Feb 2016,E-ISSN:2321-9637

[7] Islamuddin, Imran Ahmad (Treat ment of Do mestic Wastewater by Natural Adsorbents Using Multimedia Filter Technology) International Journal of Emerg ing Technologies in Engineering Research (IJETER) Volume 4, Issue 4, April (2016)

[8] Anjitha.A, Duithy Goerge (Co mparat ive Study Using Rice Husk and Its Ash as Natural Coagulants in Waste Water Treatment) International Journal of Scientific & Engineering Research, Volu me 7, Issue 4, April-2016 232 ISSN 2229-5518

[9] Firas Hashim Kamar, M ihaela Emanuela (Heavy Metals: sources, health effects, environmental effects, removal methods and natural adsorbent material as low-cost adsorbent)ISSN 2319-8885,Vol.03,14 June 2014

[10] Rohana Abdullah, Is mail Abustan (Wastewater treatment using bentonite, the combinations of bentonite-zeolite, bentonite-alu m, and bentonite-limestone as adsorbent and coagulant) international journal o f environmental sciences Volu me 4, No 3, 2013, ISSN 0976.