

Stabilising And Employing Plant Husk To Transform Leachate Into A Non-Toxic Liquid For Groundwater

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Abstract- This paper explores the filtration and purification of leachate water. The plant husk fiber act as a filter material for surface water. Examines the effectiveness of coconut husk fiberin removing impurities from surface water. and in these, filtration process the Gravels, Pebbles, Sand, and Activated carbon where been used. The maximum sorption capacities of heavy metals on the pretreated plant husk were extremely high.

Keywords- Filtration, Planthusk, Leachate water, Coconut husk, Impurities, Surface water, Gravels, Sand, Pebles, Activated carbon, Sorption

I. INTRODUCTION

ALeachate is any liquid that, in the course passing through extracts soluble or suspended solids, or any other component of the throughwhich it has passed.

Leachate is a widely used term in the environmental science when the specific meaning of a liquid that has dissolved or entrained environment harmful substances that may enter the environment. It is most common the context of land-filling of putrescible or industrial waste.

II. LITERATURE SURVEY

Urban Green Infrastructure: Overview of green roofs, vertical gardens, and urban forestry. Sustainable Transportation Systems: Case studies of eco-friendly metro systems worldwide. Ecological Benefits of Green Forestry: Carbon sequestration, air purification, and biodiversity enhancement.

in Implementation: Structural limitations, maintenance costs, and public acceptance.

III. DESIGN PRINCIPLES

The chapter says about the model developed to leachate by application of various media likePlant husk,Gravels, Pebbles,Sand, and Activated carbon.

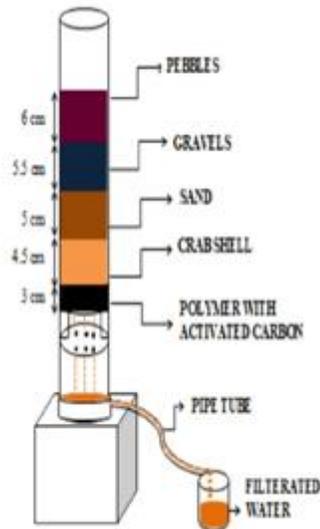
A transparent pipe of 4” diameter, 3mm thickness and 60cm eight is altered to place the filter media.

- The hole of ½” is drilled at the bottom of the pipe and the tube is inserted into the holefor the water outlet.
- The pipe dummy with small holes is fitted at 10cm from the bottom of the pipe for thesupport of the layers.
- The bottom layer is plant husk for 3cm height is placefirst.
- River sand of less than 0.7mm for 5cm height is laid next.
- At the top of sand , Gravels of size of 0.7mm-6mm is laid next.
- At the top most layer, pebbles of size 6-12mm is laid for 6cm height.
- Mesh is kept in between all the layers,for the layer particles to not pass each other.

IV. IMPLEMENT STRATEGIES

This chapter deals with the methodology framed to carry out the project through the inferences made from literature review. It clearly explains the step by step procedure carried out and the detailed working of crab shell compared characteristics of untreated and treated Leachate.

The site selected to collected sample for analysis and treatment of sanitary landfill leachate from DUMPYARD in KODUGAIYUR.The sample contain waste from various sources such as residential industrial, electronic municipal and bio-medical waste



V. ECOLOGICAL AND SOCIAL BENEFITS

The pH of leachate indicates the negative log of hydrogen ion concentration present in leachate, it is thus an indicator of alkalinity of leachate, the pH value is less than 7 is acidic, if greater than 7 is alkaline determine of pH value is depends on the availability of suitable value .Basically leachate is alkaline but as time passes pH tends to fail due to production of acids by bacterial action in anaerobic and nitrification process.

VI. CHALLENGES AND SOLUTIONS

Leachate is normally turbid resembling waste water from industries containing floating materials like decaying master, oil, grease, etc.,

The turbidity increase as the leachate becomes stronger. The degree of turbidity can be measured and tested by turbidity rods and by Nephe.

VII. FUTURE DIRECTION

The DO test performed on leachate before treatment helps in inducing the condition of Leachate, only very fresh leachate contain some do which is soon depleted by decomposition therefore the DO fresh leachate depends upon temperature. Is the temperature of these leachate is more the DO will be Less.

VIII. CONCLUSION

The Using the combination of [activated carbon (crab shell) and polymer] ; removal efficiencies such as 41.25%,

52.6% ,73% ,29% ,54.5% ,84% of TS,Ammonia nitrogen,Calcium, Potassium, Phosphorus, Conductivity Cod , Bod respectively can be achieved. Approximately 20 minutes was sufficient time to allow the adsorption reaction to achieve equilibrium.

It has been concluded that ; the reacted leachate water can safely recharge into underground (or) used for some other domestic purposes. Hence the process is an eco- friendly without use of special equipment, electricity, less chemical usage and also with zero operational and less maintenance cost.

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