

Reuse and Reycle of Filter Backwash Water

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ABSTRACT

During Most of Water Treatment Plants the spent filter backwash water which is generated is thrown in rivers which cause pollution. The amount of wash water generated is at a rate of (10-15%) of the amount of purified water in the plant. In many countries like India problem of water shortage is very serious. Hence, this spent Filter backwash water is necessary to recycle and reuse to save water. In this project I want to perform many experiments to check the quality of spent filter backwashwater. The parameters I want to check which are Turbidity, Hardness, Chlorine Content etc.

Key words: Backwash, Filtration, Reuse, Treatment, Spent filter backwash water.

I. INTRODUCTION

In this study I conclude that the backwash water can be reuse and recirculated with minimum turbidity. The concept of zero discharge can be obtain in this study. This process will lead to zero discharge concept and it can save 4% of water. This water we can use for many other purposes.

In this Project I want to give detail explanation of what is exact spent filter backwash water and how we can recycle it by using efficient coagulant to save water as much as possible.

SPFW means spent filter backwash water which exactly means the water remains after the all treatments that we can't use directly for no other purposes. Many of us throw this SPFW in sewer which cause direct pollution. I studied many research papers of this topic. In those papers they use many chemical Coagulant. Here, I want to use natural coagulant as seeds of drumstick plant which is easily available in Asia and south America.

II. OBJECTIVES

- To use spent Filter backwash water for various purpose such as irrigation, Drinking and many other purposes.

- To design and maintain a system that is economical and reliable and Safe.
- The Turbidity of water not more than 10 NTU and water must have moderate hardness and PH.
- All parameters should be in neutral level.

SCOPE

- In earlier researches that I saw in literature review that the spent filter backwash water is treated during water treatment by various methods. This experiment includes various methods such as sedimentation, coagulation & flocculation, second clarification, ultrafiltration (UF) and recirculation of settled SFBW. Coagulation conducted by PAFCl and FeCl₃ as pre polymerized and traditional coagulants.
- I want to use natural coagulant like Moringa Oleifera i.e drumstick which is easily available and economical coagulant.
- The seed of the drumstick plant (Moringaceae), which grows in India many Asian countries, has been investigated as a natural coagulant for water purification. Seeds would be harvest from fully matured plants keep it for drying and store it in powder form. Experimental turbidities up to 300 NTU and pH to 8.1 were used during the experimental phase that I saw in research paper. In one of the paper I have read that they take a small dose of 100 mg/l of seed powder found to lower the turbidity to 5 NTU, a value comparable to alum up to pH 7.0. this overall performance of alum I want to compare this one to my self-generated coagulant

III. PROBLEM STATEMENT

In Water treatment plants (WTPs) generate a large amount of waste (waste water) known as Water treatment sludge (WTR), during the treatment of raw water treatment for municipal supplies. Disposal of such a large volume of WTS (Water treatment plants) that is in an eco-friendly

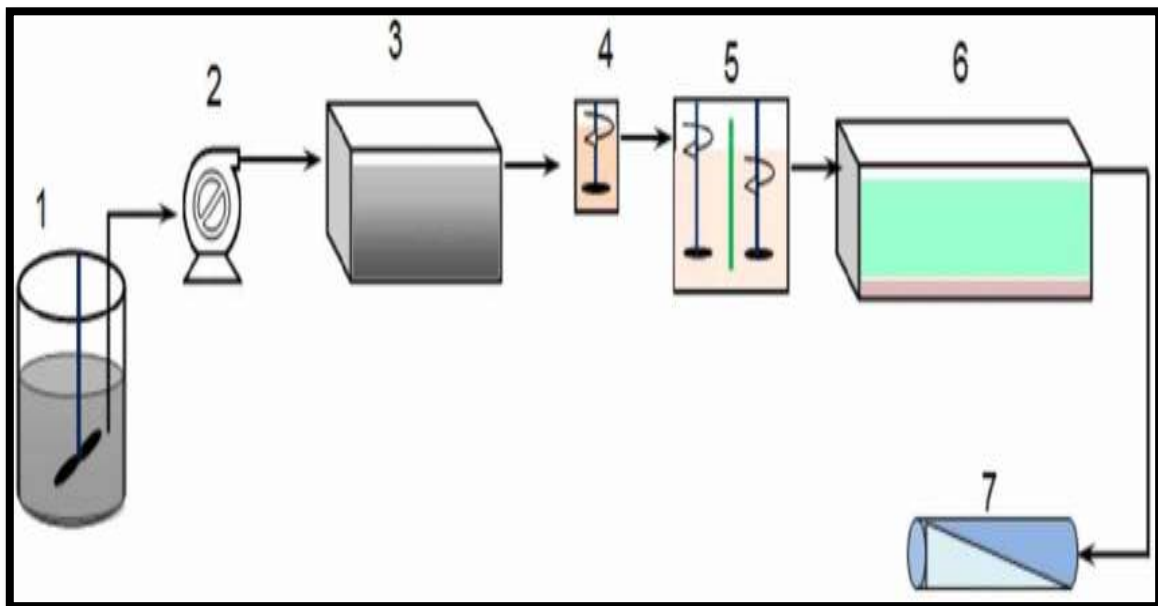
way remains a challenging task for engineers and scientists.

In India and other developing countries and also small villages this WTS from most of WTPs is discharged directly into nearby river, stream or drainage basin, causing significant damage to environment and pollution rising day by day. Hence, reuse of filter backwash water is important.

In this project I want to use natural coagulant in my project which is easily available in India and it is most economical than other coagulants. The seed of the drumstick plant (Moringaceae).

- Select the topic
- Literature Survey
- Objective
- Prepare project approach
- Sample collection of backwash water
- Conducting test on sample
- Calculation of all tests
- Analysis of outcomes
- Preparation of report

IV. METHODOLOGY



Schematic of the experimental set-up. 1: A small Syntax tank for raw SFBW, 2: pump, 3: primary sedimentation, 4: coagulation (using Natural Coagulant), 5: flocculation, 6: secondary sedimentation

SCHEDULE OF EXECUTION

MONTH \ TASK	JUL 2021	AUG 2021	SEPT 2021	OCT 2019	NOV 2021	DEC 2021	JAN 2022	FEB 2022	MAR 2022	APR 2022
Select the topic	X									
Literature Survey		X								

Objectives										
Prepare project approach										
Sample collection of backwash water										
Conducting test on sample										
Calculation of tests										
Analysis of Outcomes										
Report preparation										

REFERENCE

• Jurnal Papers :

1) Dataset On The Cost Estimation For Spent Filter Backwash Water (Sfbw) Treatment

Authors:

Afshinebrahimiamokhtarmahdavibmeghdadpirsahe bcfariborzalimohammadidamir Hosseinmahvie

2) Investigating Calcined Filter Backwash Solids As Supplementary Cementitious Material For Recycling In Construction Practices

Authors :Tarique Ahmad, Kafeel Ahmad , Mehtab Ahmad

3) Study On Backwash Wastewater From Rapid Sand Filter By Monolith Ceramic Membrane.

Authors : Li Weiyong , Akira Yuasa, Dong Bingzhi , Deng Huiping , Gao Naiyun

4) Dataset On The Spent Filter Backwash Water Treatment By Sedimentation, Coagulation And Ultra Filtration.

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