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REUSE OF DOMESTIC WASTEWATER IN RESIDENTIAL BUILDING

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ABSTRACT:

Domestic water consumption makes up 8% of total global water use (UNWATER 2012). Particularly in developed countries, domestic water use is often many times larger than the WHO minimum recommended per capita consumption. Thus, household water consumption has a large potential to be reduced. Benefits of reducing domestic water consumption include lower water bills or less time spent collecting water, reduced pressure on local water resources, and increased availability of potable water available for appropriate purposes such as drinking, cooking, and hygiene. One effective way of reducing water consumption is to reuse the wastewater produced at the household level. The reuse of wastewater presents an opportunity to not only save water and financial resources by reducing water consumption, but to simultaneously increase food production or create livelihood. In developing countries, optimising wastewater reuse can therefore be a significant window for development

Key Word-Domestic, water, consumption, waste water.

INTRODUCTION:

Wastewater treatment, also called sewage treatment, the removal of impurities from wastewater, or sewage, before it reaches aquifers or natural bodies of water such as rivers, lakes, estuaries, and oceans. Since pure water is not found in nature (i.e., outside chemical laboratories), any distinction between clean water and polluted water depends on the type and concentration of impurities found in the water as well as on its intended use. In

broad terms, water is said to be polluted when it contains enough impurities to make it unfit for a particular use, such as drinking, swimming, or fishing. Although water quality is affected by natural conditions, the word pollution usually implies human activity as the source of contamination. Water pollution, therefore, is caused primarily by the drainage of contaminated wastewater into surface water or groundwater, and wastewater treatment is a major element of water pollution control.

LITERATURE REVIEW:

Narcis Barsan, Hanen Filali , Dalila Souguir,Valentin Nedeff,Claudiz Tomozei (2022):
In this paper, a comprehensive review on greywater is presented. Emphasis is given to the techniques used to treat and recover greywater, and special emphasis is placed on the risk of the existence of the novel coronavirus "SARS-CoV-2" in greywater and the possibility of its spread via the reuse of this water. In general, greywater is considered wastewater collected from domestic sources, with the exclusion of toilet water (which is considered as blackwater). Greywater represents 50% to 80% of the total volume of wastewater all over the world. This review provides various aspects related to greywater, such as origins, characteristics, and existing guidelines for greywater proper treatment and reuse. Several approaches and techniques have been developed to study the performance of different greywater treatment systems. These methods are critically discussed in this article.

Olaoye, R.A, Ojoawo, S.O,Oluremi, J.R and Yusuf, A.D (2018) Most waterborne diseases can be prevented using simple, low cost water filtration techniques. The aim of this study is to design a low cost domestic slow sand filter, which can be operated and maintained effectiveness at household level by a member of the family, and determine its effectiveness in removing selected contaminants from the raw groundwater. Fine sand, activated charcoal, coarse sand, and gravel were used as media column for the developed slow sand filtration media. Common selected physico-chemical and microbial water parameters were examined before and after filtration with the slow sand filtration system. The filter was able to remove turbidity of the raw groundwater in the range of 86 - 92% without hampering the pH value or the temperature below the acceptable standards set by the Nigerian standards for drinking water quality. The filter media was able to reduce an average of 44 - 82%, 29 - 53% and 60 – 66% of total hardness, calcium hardness and chloride content, respectively from the chemical composition of the groundwater samples. The media also showed high effectiveness in reducing biological impurities from the groundwater. It was able to remove effectively the concentration of E-Coli and coliform counts. The average percent removal of E-coli and coliforms was found to be 100%. These were achieved with the aid of the bio-film layer that developed on the topmost part (fine sand layer) of the filter which

E. Huertas, M. Salgot, J. Hollender, S. Weber, W. Dott, S. Khan, A. Schäfer, R.

Messalem, B. Bis, A. Aharoni(2008):

Scientists working closely on issues of water reuse are far from having solved all concerns related to the practice. From the very beginning of a water reuse project, scenarios must be prepared from the 'zero scenario' (no reuse) through to more complex and expensive ones (e.g. reverse osmosis for potable water treatment) to help stakeholders to select the best option for increasing available water resources, the ultimate purpose of reuse. In any case, the use of adequate tools to build scenarios is paramount. From Decision Support Systems to the simplest analytical tools, all knowledge is valuable. Detailed studies must be undertaken to identify necessary technologies, schemes and control tools. As public health concerns are normally among the main constraints for reuse any scenario will need to include detailed risk assessments. To achieve an adequate risk assessment, data pertaining to microbiological, chemical and biological factors is necessary. Unfortunately, suitable techniques and criteria are not always established by rules and regulations. However, several strong attempts have been made in some countries. For the calculation in this paper, seven microbial and four chemical water qualities were selected, based on the criteria marked by a Spanish draft on reuse standards. Once the basic calculations were performed, a final decision whether the scheme can be implemented should be based on three phases of risk assessment; analysis, calculation and communication.

OBJECTIVES:

- To Study the utilization of the rapid sand filter
- To make a mechanism to reuse the waste water
- To provide the device at affordable and efficient manner

NEED OF STUDY:

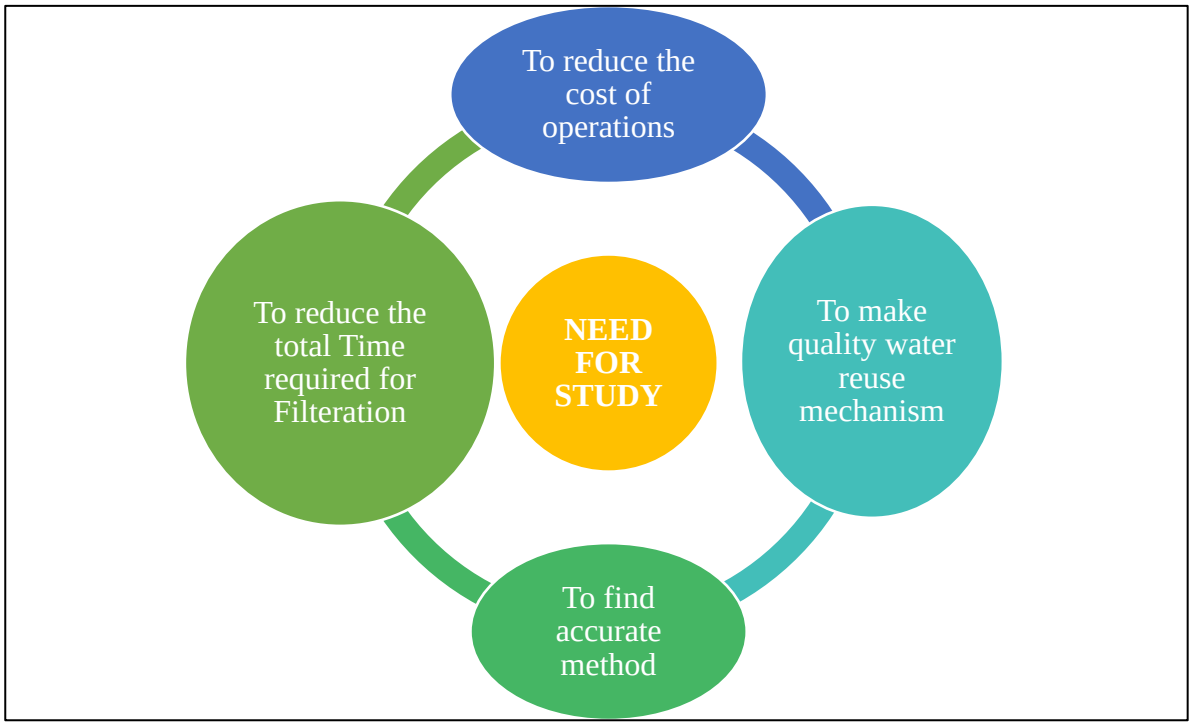

Fig.1: Need for Study

OUTCOMES FROM THE STUDY:

- To reduce the quantity of waste water and reuse of waste water.
- It will reduce daily demand of flush water 80-120l per day for and family of 3-4 members.
- The objectives and aim of the study are elaborated in the preceding chapters based on which the findings are illustrated.
- Waste water is reused for the domestic purpose with better water quality.

Conclusions

All the things considered this issue shows a new aspect for filter designing for which have great impact on environment and human life. This can be achieved by using economical materials and provide efficient filter

for individual flats. The design and Construction system of this Filter requires new perspective and wide concept of work.

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