OSP-37

Reuse of Bathroom and Reverse Osmosis Membrane Wastewater with Economical Water Filter

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This project aims to reuse wastewater from toilet cleaners and soap to transform it into reclaimed water. The process involves mixing two types of wastewaters, resulting in unfiltered water with insoluble precipitates that are separated by an economical water filter. The wastewater generated during bathing using soap is known as soap wastewater (SWW) and the wastewater generated during cleaning the toilet bowl using a toilet cleaner is referred to as toilet cleaner wastewater (TCWW). These two wastewaters are mixed in a precipitation tank where three main processes occur: neutralization, demulsification and precipitation of surfactants. This mixing process causes the contaminants in both wastewaters to precipitate, eliminating the need for extensive secondary treatments. Similarly, the mixture of RO membrane wastewater (ROWW) and SWW results in precipitation due to a process known as salting out. The wastewater mixture in the precipitation tank is then sent to an economical water filter made from waste materials, such as waste glass and ceramic tile waste. This concept of preparing reclaimed water can be implemented in residential apartments, individual houses and hotels. The end goal of this project is to produce water that can be reused in non- consumable ways, contributing to water conservation efforts. This project underscores the importance of innovative approaches to waste management and environmental sustainability.

Keywords: Conservation, Reclaimed water, Reverse osmosis, Wastewater treatment, Waste filter

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