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A COMPARATIVE STUDY ON THE PERFORMANCE OF COMMERCIAL AND SHREDDED EXPANDED POLYSTYRENE ROUGHING FILTER AS PRETREATMENT FOR THE IMPROVEMENT OF THE PHYSICAL PROPERTIES OF WATER FROM TIGUM RIVER, SAN ISIDRO, JARO, ILOILO CITY

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by

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ABSTRACT

Domestic-scale water filters often require relatively low turbid water which is often not available in times of natural calamities, requiring the use of water pretreatment systems for turbidity reduction in the available water. Studies on expanded polystyrene (EPS) show its viability as a filter media in roughing filters used as water pretreatment. This study was conducted to design and construct a vertical upflow roughing filter as pretreatment using EPS as the filter media and to evaluate and compare the performance of two EPS setup: one composed of commercial EPS beads with diameter size of 3-5mm and the other is composed of shredded EPS beads with the same diameter size. Water analysis of the raw and product water was conducted to assess the performance of the EPS beads, to evaluate the physical parameters of turbidity, total suspended solids (TSS) and color, to calculate the turbidity reduction efficiency (TRE) and TSSRE, and to compare the performance of the two setups using statistical analysis. The TRE for both setups averaged more than 90% while the TSSRE averaged only about 15%. Statistical analyses show no significant difference for TRE, TSSRE, as well as color, for both setups. Shredded EPS was found to be as efficient as commercial EPS in turbidity reduction, while both are inefficient in TSS reduction. No correlations were found between turbidity reduction and TSS reduction.