



RICE HUSK CHARCOAL WASTE TO TREAT THE WASTEWATER DISCHARGED BY RUBBER RECLAMATION INDUSTRY

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Abstract: This study addresses the substantial environmental challenges associated with the rubber reclamation process, characterized by the generation of two prominent waste streams: wastewater and waste burnt rice husk, termed rice husk charcoal. The wastewater, produced during the conversion of buffing dust into reclaim rubber, is burdened with higher levels of chemical oxygen demand (COD) at 9860 ppm and turbidity at 1260±50 NTU, posing significant environmental risks upon discharge. The objective of this study is to explore the feasibility of utilizing wasted rice husk charcoal as an adsorbent for the treatment of wastewater generated from the same industry. A batch adsorption experiment was conducted, focusing on the determination of the optimal rice husk charcoal dosage and contact time through adsorption isotherms and kinetics experiments. The results revealed that an optimal dosage of 10 g/L of charcoal led to a substantial reduction in COD (57%) and turbidity (97%), corresponding to an excellent adsorption capacity of 512 mg/g for COD and 122.4 NTU/g for turbidity, respectively. This study shows, the wasted rice husk charcoal can primarily be used in the pre-treatment to reduce the significant load of organics. The wasted rice husk charcoal could be seen as a resource for the same rubber industry to treat its own wastewater. This finding confirms the reuse of waste material as win-win approach towards the sustainable resource management.

Keywords: Batch adsorption, Rice husk, Rubber, Wastewater