

Effectiveness of Banana Pith as Plant Based Coagulant for River Water Treatment

Abstract

River water pollution is one of the remarkable global issues that cause water crisis worldwide. Coagulation-flocculation treatment is extensively applicable for treating river water. Nonetheless, many developing countries still paying high cost for importing chemical-based coagulant as water treatment agent which is non-environmentally friendly and possess potential hazard to human health. Thus, in this research, banana pith was selected as natural coagulant as alternative material for existing chemical coagulant in river water treatment. Optimum dosage and pH of banana pith in river water treatment was examined through a series of Jar Test experiment. A comparative study on river water treatment from two different sampling sites using banana pith was evaluated in term of the percentage of turbidity and COD removal. The results indicated that the banana pith was able to effectively remove 73.53% and 92.72% of COD and turbidity respectively for Station 2 (Esplanade Pengkalan Asam) at optimum pH of 4 with desired dosage of 6 mg/L. On the contrary, banana pith eliminated 56.03% of COD and 82.80% of turbidity for river water from Station 1 (Bukit Lagi) at optimum pH of 4 and dosage of 10 mg/L. Obviously, banana pith can perform well in removing turbidity and COD river water (Station 2) as compared to Station 1 for both parameters. Overall, the finding indicated that the banana pith has a potential and promising alternative natural coagulant in future for replacing commercial coagulant used in river water treatment.