

Effectiveness of Jackfruit Seed Starch as Coagulant Aid in Landfill Leachate Treatment

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Abstract : Currently, aluminium sulphate (alum), ferric chloride and polyaluminium chloride (PAC) are the most common coagulants being used for leachate coagulation-flocculation treatment. However, the impact of these residual's coagulants have sparked huge concern ceaselessly. Therefore, development of natural coagulant as an alternative coagulant for treatment process has been given full attentions. In this attempt jackfruit seed starch (JSS) was produce by extraction method. The removal efficiency was determined using jar test method. The removal of organic matter and ammonia were compared between JSS used in powder form and diluted form in leachate. The yield of starch from the extraction method was 33.17 % with light brown in colour. The removal of turbidity was the highest at pH 8 for both diluted and powdered JSS with 38% and 8.7% of removal. While for colour removal the diluted JSS showed 18.19% of removal compared to powdered JSS. The diluted JSS also showed the highest removal of suspended solid with 3.5% compared to powdered JSS with 2.8%. Instead of coagulant, JSS as coagulant aid has succeed to reduce the dosage of PAC from 900 mg/L to 528 mg/L by maintaining colour and turbidity removal up to 94% and 92 % respectively. The JSS coagulant also has decreased the negative charge of the leachate nearly to the neutral charge (0.209 mv). The result proved that JSS was more effective to be used as coagulant aid landfill leachate treatment.

Keywords : landfill leachate, natural coagulant, jackfruit seed starch, coagulant

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