LEACHATE TREATMENT BY GRANULAR ACTIVATED CARBON FILTER IN A HORIZONTAL REACTOR

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Abstract
In an open dumping system, leachate of most Indonesia landfills could infiltrate into soil. It could pollute soil and groundwater. It happens because there is no waterproof liner or liner that could prevent leachate to infiltrate or remediate the leachate. Therefore, a study on this liner is needed.

This study will examine the potential of granular activated carbon filter to reduce the pollution of leachate. There are two types of granular activated carbon filters, those are made from tamarind wood and coconut shell. Two conditions of the leachate are set, i.e. by pre-treatment and without pre-treatment. The pre-treatment is done by adding Aluminium sulphate and Poly Aluminium Chloride.

The results indicate that activated carbon which is made from tamarind wood and coconut shell have a relatively same ability to reduce the leachate pollution. However, they are not very effective to reduce the leachate pollutant since the highest efficiency of reduction is only 4.7%-19.25% for organic materials. The highest efficiency of reduction TSS and colour are 58.8%-87.5% and 19.4%-46.35%.

The pre-treatment do not improve the ability of activated carbon to reduce the pollutant; nevertheless, the pre-treatment itself can reduce highest 53.4%-64.5% of organic materials. The highest efficiency of colour reduction is 91%-97%. And the value of TSS increase as many as the adding of the coagulant.
Keywords: leachate, activated carbon, pre-treatment and without pre-treatment, horizontal reactor.