

Thesis Title The Study on Capability of Peat
 as Cation Exchanger

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ABSTRACT

This work has involved the study on capability of peat as cation exchanger in continuous column. The main objective is to investigate whether peat is feasible for using as cation exchanger column for heavy metals removal and also the factor effecting to enlarge cation exchanger column of peat. Adsorption isotherm has been carried out using cadmium and copper solution of 50 ppm with up to 9 selected peat samples. Column test has also been performed using the selected peat with best adsorption capability. The glass column (ϕ 1.8 x 30 cm) and three different flow rate have been applied. The samples were

collected and analysed using Atomic Absorption Spectrophotometer. The results of service time and bed-height were plotted, and then were calculated using Adams and Bohart's equation.

Adsorption isotherm results confirmed that peat has adsorption capability. The Narathiwat soil series no. 21 and 23 showed their adsorption capability on cadmium and copper, taking a reasonable service time to meet the industrial waste water standard of 0.03 and 1.00 ppm respectively. And the calculated results using applied Adams and Bohart's equation showed that peat is capable to some extent for heavy metal removal. However, in practice it is rather inconvenient to use it as cation exchanger column as peat regeneration may be required at every 2 hours. Eventhough, increasing bed-height to increase column efficiency can be done but capacity loss due to critical bed depth and adsorptive capacity of peat must be taken into consideration. Therefore, the influence of physical factors that effecting peat column should be further investigated.