Thesis Title **Attenuation of Pollutant Concentration in Leachate by Soil from Selected Site in Chiang Mai Province**

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Abstract

The attenuation of organic carbon , nitrogen and phosphorus by three soils from selected sites in Chiang Mai Province (CM , DL and MH soils) were investigated in this study. The experiments were performed in soil column experiments were conducted with the initial hydraulic loading of 1.6 and 4.0 $cm.^3/cm.^2$-day and the experiment period was 20 weeks , CM soil consists of 71 % Sand , 22 % Silt and 7 % Clay , DL soil consists of 89 % Sand , 8 % Silt and 3 % Clay and MH soil consists of 71 % Sand, 17 % Silt and 12 % Clay. The leachate used in this study were collected from anaerobic and semi- aerobic lysimeters which were the experimental models for the other study.

The results of the attenuation of pollutants through soil column showed that every column could reduce TOC and COD in the leachate up to 90 % throughout the experiment period except the column filled with MH soil that TOC and COD removals were 62 % and 72 %, respectively. CM and DL soils could reduce organic-nitrogen in the range of 70-99 % while lower removal percentage were investigate in MH soil. The ammonia-nitrogen removal percentages in the column filled with CM and DL soils at the initial low hydraulic loading were higher than the column filled with CM , DL and MH soils at the initial high hydraulic loading. After 6 weeks of the experiments , the results showed that every column could reduce ammonia-nitrogen in the level of more than 80%. Every soil could reduce phosphorus in the lechate more than 90 %. In addition , the column filled with CM soil at the initial high hydraulic loading. Moreover , higher removal percentage of phosphorus by CM soil were investigated compared to DM and MH soils.

The results of batch experiment showed that MH soil which contain higher clay content could adsorb TOC and TKN in the leachate better than the other two soils. However , the relationship between the attenuation of pollutant in the leachate by soil column and the adsorption batch test could not be concluded in this study.