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CONTAMINATION IN MANGROVE SOIL : A CASE STUDY OF TANNERY
INDUSTRY, MUANG DISTRICT, SAMUT PRAKARN PROVINCE. THESIS
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The aim of this research is to study the chromium contamination in mangrove soil affected by wastewater from the tannery industry, Muang district, Samut Prakarn province. The methods of the research are firstly sampling the soils in various sites and secondly testing them in the laboratory for the analysis. The soil samples taken from the swamp in which wastewater is usually released are to be compare to the soil samples from the industrial area and residential area which were not affected by the wastewater. The results are needed to study the level of chromium contamination in soil. There are two forms of chromium contamination in the study. One can be adsorbed by soil and the other dissolves in water. The physical and chemical properties believed to affect chromium contamination are soil texture, organic matter, cation exchange capacity, soil moisture, pH value and soil temperature. The values of these properties in different soils were obtained using the method of one-way analysis of variance. The values also supported by the information of treated wastewater sample.

The result in the research can be concluded as follow. The mangrove area, which is directly contaminated by the wastewater is found to have higher level of chromium than the industrial and residential areas. The level of metal substance in mangrove area also exceeds the standard metal level, which is acceptable. When considering the physical and chemical properties relating to the adsorption of the soil, it is found that the clay particle, organic matter and cation exchange capacity in each area are not different within 95%. The ability for chromium adsorption in 3 areas was not different. However it is found that the soil moisture is the parameter which directly affects the ability of absorption of the soil. The mangrove area has higher ability of chromium absorption in soil than the industrial and residential area. This is because the mangrove area has the effect of wastewater and the seawater, which make the moisture in soil higher than in other areas. When considering the physical and chemical properties relating to the chromium dissolving in water, it is found that the pH values in each soil sample were not different within 95%. This makes no differences in the ability of chromium to dissolve in water. The soil moisture and soil temperature do not make any differences in the ability of chromium to dissolve in water either, although the soil moisture and soil temperature are slightly different in each area.

Considering the quality of the wastewater in the industrial area, it is found that BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), SS (Suspended Solids), TDS (Total Dissolved Solids), TKN (Total Kjeldahl Nitrogen), trivalent chromium and hexavalent chromium exceed the standard limit that can be accepted ; pH value and the water temperature only within the limit.