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KEY WORD: ADSORPTION / FLY ASH

JANNA SANGUANROONGVONG : REMOVAL OF HEAVY METALS FROM WATER BY FLY ASH.

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This experimental research aims to use fly ash adsorbent which is inexpensive to remove three types of heavy metals (nickel, cadmium and lead). Optimum condition for removing heavy metals from solution which had three different levels of concentration were investigated. The pH levels of solution were adjusted from 3 to 10. Next stage, metal-laden fly ash was tested by leaching test method.

From the study of physical characteristics, the shape of fly ash was round and the size was between 10 to 100 micrometer in diameter. It was found that efficiency removal depended on pH, contact time and concentration as the following results: The optimum pH for nickel removal was 10 and the initial concentration was 40 mg/l. At 10 minutes, the efficiency removal was 99.52 %. The optimum pH for cadmium removal was 10 and the initial concentration was 10 mg/l. At 30 minutes, the efficiency removal was 99.12 %. The optimum pH for lead removal was 10 and the initial concentration 40 mg/l. At 5 minutes, the efficiency removal was 99.55 % and it was found that the removal of three heavy metals decreased when the initial concentration decreased at each optimum condition.

The result from leaching test of three types of heavy metals was found to be higher than the allowance levels of hazardous waste criteria imposed by Department of Industrial Factories.

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ลายมือชื่อนิสิต

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