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KEY WORD: HEAVY METALS/LEAD/SELENIUM/SLAG/ADSORPTION

PARINYA BOONSONGTHAE: REMOVAL OF LEAD (+2) AND SELENIUM (+4) BY SLAG OF BLAST FURNACE FROM STEEL PLANT. THESIS ADVISOR: ASSIST.PROF.SUTHA KHAODHIAR, 99 PP. ISBN 974-03-1307-8

This research investigated the removal of lead and selenium from synthetic wastewater using blast-furnace slag from steel plant. The objectives were to investigate composition of slag, suitable contact time and pH for removal lead and selenium in batch process. The results from batch experiments were used to set up the adsorptive adsorption study.

The compositions of slag are mainly calcium, silica and alumina that came from mining process. Lime was added as slag forming agent. For batch process, lead and selenium adsorption equilibrium were reach in less than 5 hrs. Solution pH is important parameter effecting both lead and selenium adsorption. Lead reacts and forms precipitate with slag at pH less than5, and the removal efficiency increase with decreasing pH. So at pH 5, the efficiency of lead removal by slag is minimal. On the other hand, selenium adsorption by slag decreases with increasing pH. When the solution pH was higher 5, the efficiency is drastically decreased. There are 2 processes that contribute to selenium removal from solution by slag, chemical precipitation and adsorption. The adsorption of both lead and selenium can be well modeled by Freundlish equation.

For adsorptive column study, breakthrough time around 20-25% compare with the number calculated from theory.