

# **A Comparative Study between Cu and Pb in the Speciation Study of Heavy Metals in a Stabilization Pond Treating Household Wastewater**

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The waste stabilization pond system in Taman Kota Permai, Seberang Perai Tengah, Penang consisting of two facultative ponds in parallel and a maturation pond connected to each of them in series is being used to treat domestic sewage. This study investigates the removal efficiency of trace metals (Cu and Pb) and their speciation in the particulate of this stabilization pond system.

The percentages of removal efficiencies of trace particulate heavy metals along the treatment path were 62% for Cu and 65% for Pb. The speciation of particulate heavy metals was carried out according to the procedure which partitions particulate trace metals into five fractions, namely, (a) exchangeable, (b) bound to carbonates, (c) bound to Fe-Mn oxides, (d) bound to organic matter and (e) residual. The results showed that Pb appeared mainly in the bound to Fe-Mn oxides fraction. The percentage distribution of Pb in this fraction in the particulates of the final effluents was 69 %. However, Cu was mainly found in the bound to organic matter fraction and its percentage distribution was 64%. The results also shows that Pb is more mobile than Cu. The percentages associated with mobile phase is 80% for Pb while the mobile phase for Cu is 34% only.