

Coagulation-Flocculation of Palm Oil Mill Effluent from Pertubuhan Peladang Negeri Johor, Malaysia

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Abstract : Wastewater containing heavy metals is of extreme importance globally because of its potential threat to both the aquatic ecosystem and the soil environment. Heavy metal is hazardous even at low concentration and thereby causing various forms of diseases. One method which has been tested and found to be effective for heavy metals removal is coagulation-flocculation. For the coagulation process of POME obtained from Pertubuhan Peladang Negeri Johor (PPNJ), Oil Palm Mill Company located in Kahang area of Kluang, Johor Darul Takzim, Malaysia, different coagulants would be used to absorb and then separate the metals from wastewater. The determination of heavy metals concentration in POME was carried out using an inductively coupled plasma (ICP) and an Atomic Absorption Spectrometer (AAS). Results of the study showed that alum coagulant was successful in effectively reducing Cu, Cd, and Mn from 0.840 mg/l, 0.00509 mg/l and 8.191 mg/l to as low as 0.107 mg/l, 0.000270 mg/l and 0.612 mg/l respectively. All were obtained at a dose of 1000 mg/l. 1000 mg/l dose of ferric chloride reduced Pb concentration from 0.0248 mg/l to 0.00151 mg/l. Chitosan was best at reducing Fe and Zn from 62.91 mg/l and 3.616 mg/l to 6.003 mg/l and 0.595 mg/l all at a dose of 400 mg/l.

Keywords : palm oil mill effluent, coagulation, heavy metals, Pertubuhan Peladang Negeri Johor, Malaysia

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