

In a preliminary study of aluminum recovery, chemical sludges from wastewater treatment plant of an aluminum factory were used. Acid and alkali treatments were tested to determine optimum conditions of the recovery. It was found that the optimum pH of the recovery for acid treatment was less than 1.25 with the recovery percentage of 70-90 and more than 12.5 with 40-65 percent of recovery for alkali treatment. Water sample from the Chao Praya river at MWWA's Sam Lae intake station was used for testing the efficiency of turbidity removal of the reclaimed coagulants. When the recovered alum from acid treatment was used, the turbidity was reduced, without pH control, from 33 NTU to less than 5 NTU at the dosage of 1.64 mg/l in form of aluminum (or 20.23 mg/l as liquid alum) and at the dosage of 0.88 mg/l (or 10.85 mg/l as liquid alum) with pH control in the range of 5.5-6.5, Both selected dosages were less than the normal requirement in water supply process. When the recovered coagulant from alkali treatment was used, the same turbidity removal was achieved at the dosage of 4.5 and 3.15 mg/l in the form of aluminum (or 19.67 and 13.77 mg/l as sodium aluminate) without and with pH control, respectively. It was also noteworthy that the heavy metals present in the treated water could meet the MWWA drinking water standards. The cost of the recovery process using acid and alkali treatments was 513 and 226 baht/cu.m. of coagulant, respectively. Although the cost of the recovered coagulant from acid treatment used for removing turbidity in water treatment, 0.87 baht/cu.m. of water, was higher than that of the virgin alum used by MWWA (0.16 baht/cu.m.), the amount of aluminum sludge disposed to the environment could be reduced.