

## POLLUTION CONTROL IN SMALL-SCALE ELECTROPLATING FACTORY BY WASTE MINIMIZATION AND ION EXCHANGE TREATMENT

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Not only is the small-scale electroplating factory, a small/medium-sized enterprise (SME), faces the usual financial constraints, it is also a major contributor to environmental pollution in Southeast Asia. This study aimed to control the pollution in small-scale electroplating factory by waste minimization and ion exchange treatment. There were three small-scale electroplating factories in Chiangmai, a city in northern of Thailand, all of which did not meet industrial standards and did not install any wastewater treatment facilities. The waste minimization program was introduced to one factory. It effectively reduced amount of the wastewater by 70.8% for acidic-alkaline wastewater, by 92.2% for Ni wastewater and by 70.9% for Cr wastewater. The loss of Ni and Cr in wastewater was reduced by 82.5% and 73.4%, respectively. Moreover, the results from the ion exchange study showed that the strong acid cation resin (Purolite, C-100) was able to effectively remove Ni from the Ni wastewater when the feed concentration was below 300 mg/l and the HRT in the resin bed should be more than 3 minutes. Conductivity can be used for controlling the breakthrough point of Ni effluent. The strong-base anion resin (Purolite, A-200) was able to effectively remove Cr from the Cr wastewater when the feed concentration was below 650 mg/l and the HRT in the resin bed should be more than 3 minutes. Both conductivity and pH can be used for controlling the breakthrough point of Cr effluent.