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SOMKIAT THITIPANONT : POLLUTION PREVENTION IN TEXTILE
INDUSTRY: RECYCLING WASTEWATER FROM TEXTILE DYEING PREPARATION
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This research work investigated the recycling possibility of wastewater from the preparation process of medium-scale textile dyeing mills, applying pollution prevention technology. The expected result of this study is to minimize the environmental pollution and production cost to some extent. In order to conduct this work, the quality of water and wastewater before entering and discharging each step of the preparation process and were collected simultaneously. The samples were analyzed by the *Standard Method* parameters. A coagulation experiment using aluminium sulfate, ferrous sulfate, and ferric sulfate was conducted to seek the optimum dosage of the particles removal under the condition of integrated wastewater as received and at controlled pH 7. To test on the efficiency of the recycled wastewater, fabric quality test was conducted using a *Rapid Dyer Simulator*. Finally, an economic analysis was also studied to refer the worthiness investment of the plant.

The results from this work revealed that wastewater had high alkaline solutions, and were highly contaminated in all parameters. Approximately, 16% of wastewater from the total consumption process could be integrated and recycled. Coagulation resulted that the optimum dose of aluminium sulfate, ferrous sulfate, and ferric sulfate were 1.176 mg/l, 2.100 mg/l, and 768 mg/l, respectively. More capable with adjusted media for coagulation at the pH 7, the dosage result for aluminium sulfate, ferrous sulfate, and ferric sulfate were 750 mg/l, 850 mg/l, and 620 mg/l respectively. However the recycled wastewater with aluminium sulfate revealed the best result, arising from the result of the fabric test. The fabric appeared whitish with high efficiency to be dyed, while the fabrics prepared by recycled wastewater of ferrous sulfate and ferric sulfate were appeared yellowish and brownish, which is not attractive to the consumer. For the economic analysis using cost comparison between cost of operation, it was discovered that the recycled wastewater or the modified plant was worthwhile and expenditure can be returned within 5 years.