

Reducing environmental impact of textile wastewater by natural coagulants and reuse of effluents

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Received 26 September 2017; Accepted 5 December 2017

ABSTRACT

Water scarcity is a global problem, therefore the reuse and recycling of water is promoted in all sectors and it is a real alternative for the conservation of water resources. The industrial sector is a key point in the reuse of water as it is a major consumer of this precious resource. The textile industry consumes more than one hundred liters of water per kilogram of finished fabric during the dyeing and finishing processes. The wastewater generated by this industry is generally coloured and can also contain other recalcitrant compounds. In addition, some textile effluents have high salinity and are highly alkaline. In this work, a new treatment using a natural coagulant, *Moringa Oleifera* extract, is presented. Coagulant solution was made from moringa seed ground degreased and was tested at variable concentration (1000–5000 mg/l) on different dyeing wastewater samples. Exhausted dyeing liquors and residual washing baths samples were efficiently treated. Up to 90% colour removal was achieved, preserving at the same time the alkaline and saline properties of the water. Consequently, the treated effluents could be reused in new dyeing processes with successful results. It was shown that the implementation of this practice would have considerable environmental and economic benefits.

Keywords: *Moringa oleifera*; Wastewater; Reuse; Recycling; Textile; Dyes

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Presented at the International Conference on Water and Sustainability, 26–27 June 2017, Barcelona, Spain

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