

## **ELECTROCOAGULATION FOR THE TREATMENT OF WASTEWATER FOR REUSE IN IRRIGATION AND PLANTATION**

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### **Abstract**

Growing water scarcity in Pakistan is compelling people to use the treated wastewater at least for landscape irrigation and plantation to augment available water resources. In the present study, a laboratory scale electrocoagulation (EC) process was utilized to treat the raw wastewater in order to bring the quality up to the international wastewater reuse standards. Effect of various operating parameters such as operating time, current density and inter-electrode spacing was evaluated to achieve the maximum possible treatment efficiency. It was found that the application of 24.7 mA/cm<sup>2</sup> current density with an inter-electrode spacing of 5 cm may provide 91.8%, 77.2% and 68.5% removal in turbidity, COD and TSS within 30 minutes of EC treatment. The quality of treated wastewater was compared with various international standards/guidelines for wastewater reuse. It was found that the studied parameters such as BOD, COD, TDS, TSS, turbidity, NO<sub>3</sub>-N, NH<sub>3</sub>-N, chloride, Na<sup>+</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup>, sulfate, total phosphorus, electrical conductivity Oil and Grease (O & G) and total coliform (TC) were within allowable limits. Electrical conductivity, TDS and Sodium Adsorption Ratio (SAR) are mainly used for the determination of wastewater suitability for safe irrigation. Their values do not exceed the international wastewater reuse standards. The study shows that the raw wastewater generated at the study site after EC treatment is safe for landscape irrigation and plantation.

**Keywords:** Electrocoagulation, Wastewater, Removal efficiency, Operating parameters