عنوان مقاله:

Efficiency of electrical coagulation process using aluminum electrodes for municipal wastewater treatment: a case study at Karaj wastewater treatment plant

محل انتشار:

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خلاصه مقاله:

Background: The reuse of treated municipal wastewater is an important source of water for different purposes. This study evaluated the efficiency of the electrocoagulation process in removing turbidity, total suspended solids (TSS), chemical oxygen demand (COD), nitrate, and phosphate from wastewater at the treatment facility in Karaj, Iran. Methods: This experimental study was performed at a pilot scale and in a batch system. A 4-liter tank made from safety glass with 4 plate electrodes made from aluminum was unipolarly connected to a direct current power supply with a parallel arrangement. Wastewater samples were taken from the influent at the Karaj wastewater treatment facility. Rates of turbidity, TSS, COD, nitrate, and phosphate removal under different conditions were determined. Results: The highest efficiency of COD, TSS, nitrate, turbidity, and phosphate elimination was achieved at a voltage of 30 volts and a reaction time of 30 minutes. The rates were 88.43%, 87.39%, 100%, 80.52%, and 82.69%, respectively. Conclusion: Based on the results of this study, electrocoagulation is an appropriate method for use in removing nitrate, phosphate, COD, turbidity, and TSS from wastewater.

کلمات کلیدی:

Electrical coagulation process, Wastewater treatment