

عنوان مقاله:

Electrocoagulation Process Efficiency for Removing Effluent Pollution Caused by Drilling of Oil Rigs

محل انتشار:

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خلاصه مقاله:

Background: Electrocoagulation (EC) is a safe method for removing environmental pollutants without the need for additional chemical materials. This study investigates the performance of EC in removing chemical oxygen demand (COD), total organic carbon (TOC), total suspended solids (TSS), and turbidity from drilling waste generated by oil rigs. **Methods:** An experimental study was performed on a pilot scale in an EC reactor provided from a cylindrical glass cell (height: 30 cm and inner diameter: 5 cm), a pair of aluminum and iron electrodes, a power supply, an aeration system. wastewater Samples were collected from one of the drilling rigs in Khuzestan. The effect of current density, operation time and pH parameters on removal of COD, TOC, TSS and turbidity were determined and the optimal values of the parameters were determined. **Results:** It was found that system voltage, operation time and pH values on the removal efficiency of pollutants were statistically significant at the 0.01 level. The optimum values of pH, current density and operation time were obtained 7, 20 mA/cm² and 60 minutes, respectively and the removal efficiencies of COD, TOC, TSS and turbidity under the optimum conditions were 72%, 79%, 67% and 63%, respectively. Also, the consumption of energy was estimated to be 8.4 kWh/m³. **Conclusion:** The results indicated that the EC process is a cost-effective method in removing pollutants caused by drilling of oil rigs and its efficiency can be improved by applying optimal conditions such as current density and pH.

کلمات کلیدی:

Electrocoagulation, Chemical Oxygen demand, Environmental pollution, Wastewater

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