

OIL REMOVAL FROM OILY WASTEWATER USING ELECTRO-COAGULATION

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Due to the increasing amounts of produced water during oil production in Kuwait, the establishment of wastewater treatment unit for produced water re-injection purposes had become essential. It is estimated there that oil wells generate in quantity of 15 to 40% of produced water. The main objective of this treatment train is reduce the oil in water concentration from 2000 to 10 ppm, the maximum allowable concentration for reinjection and disposal. This study to assess its potential for removal of oil from oily wastewater by using two methods, the first method is electrocoagulation method using an electrolytic cell with horizontal and vertical Al/Fe electrodes and the second one is adsorption technique in which different adsorbents are used. The first method of the separation process of oil from oily wastewater by electrolysis was studied and the effects of electrolytic time, anode tubes diameters (the used anodes were like an array), current density, electrode spacing and electrodes material (aluminum and iron) on the removal rate of the oil in the wastewater were investigated. The orthogonal tests showed that electrolytic time was the most notable factor affecting the oil removal rate of the wastewater. The test carried out under the conditions that current density was 0.01 A/cm², electrolytic time was 30 minutes, and electrode spacing was 3 cm. The removal efficiency of oil exceeded 93% for all wastewaters tested.