عنوان مقاله:

Performance Evaluation of electro coagulation Process for Removal of Sulphate from Aqueous Environments Using plate Aluminum Electrodes

محل انتشار:

دومین کنفرانس بین المللی جایگاه ایمنی، بهداشت و محیط زیست در سازمانها (سال: 1388)

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خلاصه مقاله:

Sulphate is one of the main ions available in natural and wastewater. High rate of sulphate in drinking water causes health problems such as irritation and digestive problems and makes water bitter. The purpose of this study is to assess the efficiency of sulphate removal from drinking water through Electro cogualation process (EC) using plate aluminum electrodes. This study is an experimental pilot one in which a glass tank in the volume of 1.3 liter containing 6 plate aluminum electrodes was used. These electrodes were attached to a power supply in a mono-polar and parallel arrangement in order to switch the alternating current to the direct one. That is, each electrode was attached to positive and negative poles directly and alternately. The tank was filled with synthetic water containing sulphate with the concentration of 350 & 700 mg/L. Percentage of sulphate removal in potential range of 10, 20 & 30 V, reaction times of 40, 20 & 60 min and pH 7.0, 3.0 & 11.0 was measured. The results demonstrate that the maximum efficiency of sulphate removal is in the electrical potential of 30 V, reaction time of 60 min and pH 11.0 and increasing the concentration of ion causes the increase of time needed to achieve a suitable efficiency of removal. It indicates the direct effect of pH and difference of electrical potential on removal of sulphate through EC process. Totally, the results obtained in this research show that Electro cogualation technology can be introduced as a suitable and promising technique to remove sulphate from aqueous environments using plate aluminum electrodes.

کلمات کلیدی:

Electro coagulation process, Sulphate ion, Aluminum electrodes, aqueous environments