



Combined electro-photochemical oxidation for iron removal from ground water

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ABSTRACT

Iron in water presents health hazard, its presence in water may cause taste and staining problems. Currently applied water treatment techniques consist of a combination of different methods to achieve the elimination of harmful pollutants. The aim of this study is to investigate the efficiency of the photo-assisted electrochemical oxidation process for the removal of dissolved iron as a cheaper technology. This process could be used at room temperature and low pressure without the need for special equipment and complex operation. The photo-electrochemical cell used in this study was composed of carbon cathode, aluminum anode and high pressure mercury lamp. The effect of the irradiation time, initial concentration of iron, amount of electrolyte and current intensity on the removal efficiency of iron was investigated through series of batch runs in a photo-electrochemical reactor. Results indicated that higher iron removal was obtained at neutral pH of the solution, 20 min irradiation time, 125 ppm of NaCl as electrolyte and (0.25 A) current intensity. By this technique, the ferrous ion was oxidized and is precipitated easily as ferric ions.

Keywords: Iron removal; Electrochemical; Photochemical; oxidation; Heavy metal; Drinking water

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