



TREATMENT OF MINERAL-OIL RECOVERY INDUSTRY WASTEWATER BY SEQUENTIAL AERATION AND FENTON'S OXIDATION PROCESS

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Abstract

This study describes the treatment of preliminary aerated mineral-oil recovery industry wastewater (MORIW) using Fenton's reagent. Application parameters such as Fe^{2+} and H_2O_2 concentration, pH value, reaction period, temperature, and sludge characteristics were examined. Maximum oxidation efficiency (about 90 % COD removal and 80 % UV_{254} removal) was achieved at the conditions of 0.003 $Fe^{2+}:H_2O_2$ ratio, 180 min reaction period, pH 3 and 293 K temperature. The oxidation process of MORIW followed pseudo-second-order reaction kinetic. The studied sludge character has a high density with settling velocity. In addition, the high settlement rate (SR) and liquid/solid ratio (L/S) values demonstrated that the formed sludge was suitable for dewatering and drying processes.

Key words: COD removal, Fenton process, kinetics, mineral oil recovery industry, oxidation

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