

Abstract

Methyl parathion (MP) decontamination by hydrolysis in aqueous solutions containing 2-aminoethanol (EA) was investigated using the UV-Visible and GC/MS techniques. The kinetics of the hydrolysis reaction was studied at pH values of 4, 7, and 9 in water at 75, 85, and 95°C, respectively. At various EA concentrations 60, 100, and 200 mg/L MP degradation followed pseudo-first order kinetics and was found to be strongly pH and temperature dependent. The rate of MP degradation accelerated significantly as pH increased. The conversion reached 93.5% after 90 min of hydrolysis at a pH of 9, as compared to 69.9% and 49.8% at pH values of 7 and 4, respectively. The MP degradation byproducts removed from aqueous solutions by solid phase microextraction (SPME) were identified. The main intermediate products were *p*-nitrophenol and *O,O*-dimethyl phosphorothioate. This study concludes that hydrolysis in the presence of EA is an effective process for decontaminating solutions containing MP.