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Abstract

The inclusion of both zeolites X and zeolite Y significantly affected the dissipation of malathion in water. In the fresh water, malathion degradation followed a pseudo-first order kinetics with concomitant half-life dropping from 8.76 hours in fresh water to 4.44 and 6.65 hours up on the introduction of faujasite X and Y, respectively. Zeolite X had higher degradation efficiency as compared to the Y type. In pure fresh water, Malathion mainly hydrolyzed to form malathion monocarboxylic and dicarboxylic acids as the only degradation products. However, in the presence of zeolites X and Y, in addition to the degradation products obtained in the fresh water, dimethyldithiophosphate was also formed. Notably, all the degradation products obtained are environmentally benign compared to the parent malathion. Eventually, both the adsorption on the zeolite framework and zeolite catalyzed degradation processes contributed to the overall dissipation behavior of the malathion and its degradation products.

Keywords

Degradation Kinetics, Faujasite X And Y, Fresh Water, Half Life, Malathion