

Photodecomposition of organophosphours insecticides in titanium dioxide aqueous suspensions

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The presence of toxic materials in surface and ground water is a problem of growing significance. Increasingly, toxic anthropogenic chemicals are being detected in water supplies resulting in public concern and regulatory restrictions. Pesticides may enter the aquatic environment by a variety of routes.

There is a need to develop methods to decontaminate not only drinking water supplies, but also the source of contamination. Decontamination of water poses economic and logistical challenges since the pollutants are usually present in low concentrations and distributed over a wide area. A number of strategies have been proposed and tested to destroy toxic materials in water.

The photochemical processes have received much attention in the past few years researchers and regulators. Ultraviolet light combined with titanium dioxide powder as photocatalyst is one method that has been explored as a means to destroy toxic organics in water and has been shown to be effective in destroying a number of pesticides in water. Photoactive catalysts, when illuminated with UV-light, generate highly reactive radicals that can oxidize the organic contaminants in water.

This study examined in order to develop a means of removal of organophosphours insecticides in water, some fundamental experiments with UV irradiation were performed with a high pressure mercury vapor lamp, and photochemical behaviors and photodecomposition products were tested for organophosphours(org-p)insecticides, namely demeton-s-methyl, diazinon, parathion, phenthoate and EPN.