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Aerobic Aquatic Soil Metabolism of Pesticides in Water- and Sediment-Spiked Systems

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Abstract:

The metabolism of fenitrothion and diethofencarb in aerobic aquatic soil was examined following either water or sediment application. The more hydrophobic fenitrothion rapidly distributed from water to sediment, while a more gradual adsorption of diethofencarb by sediment was observed with insignificant biodegradation. Release of diethofencarb from the spiked sediment was observed but degradation via ester cleavage and reduction of the nitro group with more bound residues resulted in less of a release of fenitrothion into water. The distribution profiles of the pesticides and their metabolites depended on their adsorption and diffusivity in the sediment phase. The TOXSWA program was useful for evaluating the dissipation profiles of the water-applied pesticides. © Pesticide Science Society of Japan

Keywords:

biodegradation, water-sediment system, fenitrothion, diethofencarb, TOXSWA simulation

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