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**TITLE:** Accumulation dynamics of triclopyr ester in aquatic leaf packs and effects on detritivorous insects.

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**SOURCE:** JOURNAL OF ENVIRONMENTAL QUALITY; 27 (5). 1998. 1138-1147.

**SECONDARY SOURCE ID:** BIOSIS/98/33744

**ABSTRACT:** BIOSIS COPYRIGHT: BIOL ABS. Previous field studies have demonstrated that residues of the herbicide, tridopyr butoxyethyl ester (3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester) (TBEE), can accumulate in submerged leaf material of aquatic systems at concentrations up to 20 times the maximum aqueous concentrations. Accumulated TBEE residues may pose a risk of adverse effects to detritivorous invertebrates inhabiting and using natural leaf packs. We examined the dynamics of TBEE accumulation and persistence in leaf materials of laboratory and outdoor aquatic systems, and determined the ecological significance of this in terms of effects on detritivorous insects and organic matter processing. Accumulations of TBEE in leaf packs of semi-static laboratory microcosms were up to 80 times aqueous concentrations, and residues persisted for 4 to 5 d. Leaf material of flow-through laboratory microcosms accumulated TBEE at much higher rates (up to 1000 times aqueous concentrations), but residues were cleared by 48 to 72 h. Accumulation and persistence in flow-through units were dependent on water depth, velocity, and exposure duration. Accumulated TBEE residues were less in outdoor stream channels than in laboratory flow-through units, probably because of losses through sorption to natural benthic material in the stream channels. Despite accumulations of TBEE in leaf packs at up to 90 mg kg<sup>-1</sup> in systems treated at or near expected environmental concentrations, there was no significant mortality of detritivorous insects and no significant reductions in leaf consumption. Significant mortality and reduced feeding occurred only in systems treated at concentrations well above (up to 10 times) expected environmental concentrations.

**MAIN MESH HEADINGS:** \*AIR POLLUTION  
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**ADDITIONAL MESH HEADINGS:** ANIMALS  
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PHYSIOLOGY, COMPARATIVE  
PATHOLOGY  
INSECTS

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Toxicology-Environmental and Industrial Toxicology  
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Pathology-Insecta-  
Insecta-Unspecified



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