

## Recovery Following Pulsed Exposure to Organophosphorus and Carbamate Insecticides in the Midge, *Chironomus riparius*

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**Abstract.** The importance of recovery following pulsed and continuous exposure was determined by measuring the acute toxicity of two organophosphorus (parathion and malathion) and four carbamate (aldicarb, carbaryl, carbofuran and propoxur) insecticides. Two 1-h pulses caused significantly fewer symptoms of intoxication than 2 h of continuous exposure if at least 2 to 6 h in clean water were provided between doses for the four carbamates. Two 1-h pulses were equally toxic as a single 2-h continuous exposure for the two organophosphorus insecticides. Acetylcholinesterase activity in midges given two 1-h pulses of carbaryl separated by 24 h in clean water showed reactivation to control levels between the two exposures. These results contribute to the belief that episodic exposure to insecticides is less toxic if recovery in clean water is provided.