Assessment of occupational exposure to malathion and bifenthrin in mosquito control sprayers through dermal contact. (Article)

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Objective: To assess occupational exposure of malathion and bifenthrin concentrations by dermal contact and urinary 3-(2-chloro-3, 3, 3-trifluoro-1-propenyl)-2, 2-dimethyl-cyclopropanecarboxylic (TFP) acid, health symptoms developed and the relationship between bifenthrin concentrations and TFP acid in urine of the mosquito control sprayers.

Material and Method: The aerosols of these two pesticides were collected using 100 cm² cotton patches attached on the skin of upper legs of 54 volunteer of mosquito control sprayers. Their urine samples were also collected before and after application.

Results: These subjects exposed to average malathion and bifenthrin concentrations of 0.18 and 0.32 μg/cm², respectively. After application, the average concentration of urinary TFP acid in the sprayers was 39.22±50.77 mg/g creatinine ranging from 0.58 to 261.19 mg/g creatinine. A significant difference was found between urinary TFP acid levels before and after application (p<0.001) but the bifenthrin concentrations through dermal contact and urinary TFP acid levels were not significantly correlated (p>0.05).

Conclusion: The mosquito control sprayers had dermal contact with smoke of malathion and bifenthrin and some sprayers developed health symptoms after exposure. They should use protective clothing made of plastic, nylon or polyester to protect sprayers from skin contact.

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