



ASSESSMENT OF OCCUPATIONAL EXPOSURE TO MALATHION AND BIFENTHRIN IN MOSQUITO CONTROL SPRAYERS (A CASE STUDY : THE PREVENTIVE MEDICAL UNIT, ROYAL THAI ARMY)

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Abstract

The objectives of this research were to assess occupational exposure of malathion and bifenthrin concentrations by dermal contact, measure urinary TFP acid metabolite levels before and after working periods and determine the relationship between bifenthrin concentrations through dermal contact and TFP acid metabolite levels in urine of the mosquito control sprayers. The aerosols of these two pesticides were collected by using 100 cm² cotton patches attached on the skin of upper legs where the potential dermal contact was high. The study subjects were 54 volunteer mosquito control sprayers of the Preventive Medical Unit, Royal Thai Army who were exposed to malathion and bifenthrin from mosquito control application in Bangkok and the vicinity.

These volunteers were exposed to an average malathion concentration of 0.18 ± 0.13 mg/cm² ranging from 0.05 to 0.60 mg/cm² and the average bifenthrin concentration was found to be 0.30 ± 0.18 mg/cm² ranging from 0.08 to 1.22 mg/cm². After application, the average concentration of urinary TFP acid in the study subjects was found to be 39.22 ± 50.77 mg/g creatinine ranging from 0.58 to 261.19 mg/g creatinine while the majority (98.15 %) of the subjects' urinary TFP acid levels before the working period was less than the limit of detection (0.231 mg/ml). A significant difference was found between urinary TFP acid levels before and after the working period ($P < 0.05$) but this was not significantly associated with bifenthrin concentration through dermal contact and urinary TFP acid levels ($P > 0.05$).