

HEALTH IMPACT OF CHRONIC, LOW-LEVEL EXPOSURE TO ORGANOPHOSPHATE PESTICIDES IN SRI LANKA

This study aimed to investigate the health effects of chronic, low-level exposure to organophosphates (OP). An analytical study was conducted, between spray seasons, among 117 farmers trained in integrated pest management (IPM farmers), 91 untrained farmers (non-IPM farmers) and 98 fresh water fishermen (control group) living in Uda Walawe. Occupational history and symptoms experienced were recorded. Physical examination, including semi-quantitative assessment of handgrip, vibration sense and two-point discrimination was performed. Haemoglobin corrected red blood cell acetyl cholinesterase (AChE) levels (U/ g) were assessed during and between (baseline estimation) spray seasons.

IPM farmers wore headgear, long sleeved shirts and long pants/sarong during work in the field significantly more than non-IPM farmers ($p < 0.05$). Blurred vision, staggering gait, excessive salivation, dry throat, burning and itchy eyes were significantly commoner among farmers compared to fishermen. Mean handgrip force

of the fishermen was significantly higher than the farmers ($p < 0.001$). Vibration sense and two-point discrimination were similar in farmers and fishermen. Among the farmers, handgrip force ($p = 0.005$ and $p = 0.002$ in left and right hands, respectively), vibration sense ($p = 0.020$ and $p = 0.036$, in the hand and foot, respectively) and the ability to discriminate between two points ($p = 0.002$ and $p = 0.002$, in the hand and foot, respectively) were significantly lower in IPM farmers than non-IPM farmers. The difference in baseline AChE levels in the farmers and the fishermen were significant ($p < 0.005$). The drop in AChE levels following a spray season was significantly lower in the fishermen compared to the farmers ($p < 0.001$). The results indicate that chronic occupational and environmental exposure to OP leads to subtle adverse health effects. The use of protective cotton clothing appears to have a negative impact on health, and needs to be investigated further.