Background and Aims: Chlorpyrifos, an organophosphate (OP) insecticide associated with neurotoxic, reproductive and developmental effects [Perera et.al., 2005] is commonly used worldwide (Barr & Angerer, 2006) including in South Africa. The study investigated urinary levels of dialkyl phosphates (DAP), an OP biomarker, resulting from pesticide exposure amongst 40 farm workers.

Methods: Workers were tested (urinary DAP levels, anthropometry, short exposure questionnaire) before and after the first day of seasonal chlorpyrifos spraying.

Results: The workers (mean age = 42.2, SD: 11.1 years) were mostly male (65%). Median baseline urinary DAP was high amongst both non-applicators (1587.5 μg/g creatinine, n = 8) and applicators (365.6 μg/g creatinine, n = 9). There was not much evidence of an increase in post-spray DAP levels from pre-spray levels amongst both applicators and non-applicators. Hours mixing, spraying, driving a tractor and hours worked by non-applicators were not significantly associated with an increase in post-spray DAP levels adjusting for age, height, weight, gender, use of empty pesticide containers and self-reported kidney problems. Past applicator status was weakly positively associated with pre-spray DAP levels adjusting for age, height, weight, and gender, self-reported kidney problems, smoking and alcohol (β = 1019.5, p = 0.307, R² = 0.28).

Conclusions: The relationship between pesticide exposure and OP bio-monitoring require further investigation. The high DAP levels call for an epidemiological investigation into the health effects of OP pesticides.

References: