

Applicator Exposure Assessment During Thiophanate-methyl Treatment in Apple Fields

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Korea has different agricultural pattern from western countries and in particular, pesticide application has been performed by individual farmer. Such situations can result in pesticide exposure to worker at significant level.

Thiophanate-methyl is a benzimidazole fungicide, which has been used for the wide range of fungal pathogens in field crops and fruits in Korea. It is insoluble in water, and is stable in neutral, aqueous solution at room temperature. It is a carbendazim precursor and systemic fungicide with protective and curative action. Toxicity to mammalian is low as ADI value is 0.08mg/kg b.w. (Tomlin 2000).

Dermal and inhalation exposure assessment of the operator were conducted when an insecticide thiophanate-methyl was sprayed in apple fields using patch and a personal air sampler with XAD-2 resin for dermal and inhalation exposure, respectively.

For the mixing/loading, the total amount of the exposed thiophanate-methyl was 18.8 and 36.4mg for power spray and SS (Speed Spray) in apple fields, respectively, while the inhalation exposure was 380.0 and 84.5ng, respectively. The most of exposure was observed on hand.

During the application, 34.7 and 10.9mg were observed as dermal exposure for power spray and SS in apple fields, respectively, while the inhalation exposure was 40.5 and 50.5ng, respectively. The primary sites of operator contamination were hand or thigh.

MOS was calculated for risk assessment to be $\gg 1$, indicating of least possibility of risk.