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## Proceedings of the International Conference on Occupational & Environmental Exposures of Skin to Chemicals: Science & Policy

Hilton Crystal City September 8-11, 2002

### Wipe Sampling to Assess Pesticide Exposures on Skin: Preliminary Method Evaluation

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#### Background

Skin exposures to pesticides in agriculture are considered to be the primary route of worker exposure. However, there remains a paucity of data for quantifying such exposures. In addition, the methods used to measure exposures vary and the efficiency of each method of sampling may differ adding to the difficulties in interpreting results. A preliminary range finding and method evaluation survey was recently performed in California in preparation for a larger study to determine exposure reduction intervention effectiveness.

#### Methods

Hand wipes (using the NHEXAS isopropanol moistened J&J Sof-Wick gauze wipe method consisting of 2 consecutive wipes) were obtained during harvesting of a strawberry field that had been previously sprayed with malathion. To evaluate the performance of the hand wipe method, samples were collected from whole hands and individual digits (thumb and forefinger) both before and after cleaning up with soap & water. In addition, triplicate consecutive samples were analyzed separately to assess completeness of malathion removal. Additional types of samples were collected, included end-of-shift urine for mono- and diacetyl metabolites, and foliar residue samples (using a new method involving solid sorbent extraction).

#### Results

Mean whole hand pre-wash and post wash malathion loading (n=5) was 8582 ng and 3493 ng while mean digit pre-wash and post wash malathion loading (n=6) was 1457 ng and 965 ng, respectively. Furthermore, mean

consecutive removal of pre-washed digits (n=3 pair) were 1154, 558, and 436 ng, while for whole hand (n=1 pair) 5550, 1340, and 1490 ng. After washing, mean consecutive removal for digits was 557, 315, and 217 ng, respectively, while for whole hand it was 1420, 1560, and 1130 ng. Wear new latex gloves during harvesting appeared to dramatically reduce skin loading, while wearing old latex gloves did not.

#### Conclusions

The EPA hand wiping method apparently did not efficiently remove the amount of malathion loading present either before or after washing, although when loading was low (as when wearing gloves) removal appeared complete. Perhaps alternative sampling methods are more efficient, but this would need to be similarly evaluated. Efficiency of skin sampling methods and comparison to other methods continues to be a significant need for accurate exposure assessment characterization.

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Present the Proceedings for

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September 8, 2002 - September 11, 2002

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The National Institute for Occupational Safety and Health (NIOSH) co-sponsored this inaugural conference to bring together dermatologists, occupational hygienists, laboratory researchers, policy makers and other to focus on the science, knowledge gaps and policy opportunities related occupational and environmental exposures of the skin to chemicals.

The site was the Hilton Crystal City at Ronald Reagan National Airport hotel. The main conference was followed by a one-day workshop focusin on specific research and public health opportunities for decreasing the burden of skin exposures to chemicals in both workplaces and the gener environment.

Approximately 135 individuals attended. A second conference is expecte in 2004.

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