Exposure To Pesticides By Medium And Route: The 90th Percentile And Related Uncertainties

Demetrios J. Moschandreas   Illinois Institute of Technology
    djm@iit rd

Ari, H   Illinois Institute of Technology. Chicago

Karuchit, S   Illinois Institute of Technology. Chicago

Kim, Y., Illinois Institute of Technology. Chicago; Lebowitz, M. D., University of Arizona, Tucson; O'Rourke, M. K., University of Arizona, Tucson; Gordon, S., Battelle, Columbus (OH); Robertson, G., EPA-Las Vegas

This study investigates distributions of exposure to chlorpyrifos and diazinon using the database generated in the state of Arizona by the National Human Exposure Assessment Survey (NHEXAS-AZ). Exposure to pesticide and associated uncertainties are estimated using probabilistic methods with the Monte Carlo simulations. The 90th percentile of inhalation, dietary ingestion, dermal and non-dietary ingestion exposure to chlorpyrifos and diazinon of the Arizona population were estimated. Questions associated with the uncertainty of exposure estimates for the two pesticides are investigated using pertinent segments of the NHEXAS-AZ study database. Probabilistic models are also used to formulate distributions of exposures to each of the two pesticides, for several sub-population groups. Parameter uncertainties associated with the 90th and other percentiles of population and sub-population groups are addressed in this study. All subjects exposed to levels above the 90th percentile of inhalation exposure value level live in dwellings with over 50 percent floor areas covered by carpets. Inhalation exposure above or below the 90th percentile value is also related to subject education. The relative uncertainty of the 90th percentile of dermal exposure is larger than corresponding uncertainties for inhalation, dietary ingestion, and non-dietary exposure.