

Chemical surface residues: Critical determinants of occupational and residential human pesticide exposure

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Contact-transfer of chemical residues from surfaces (TSR) potentially exposes humans in occupational and residential environments. Dislodgeable Foliar Residues (DFR; $\mu\text{g}/\text{cm}^2$) were first measured to estimate potential harvester pesticide exposure following unexplained, sporadic illnesses among California citrus harvesters. DFRs became the key determinant of safe field entry programs for hand-harvested crops. Similarly, California Food and Agriculture scientists used analogous procedures to evaluate the exposure potential of chemicals following residential use. Measurement of biphasic residue decay (pseudo first order and zero order) utilizes chemical liquid-solid, liquid-liquid extraction (DFR), or physical sampling (TSR) to estimate potential human exposures. Residues measured within hours of pesticide applications form more complete residue decay curves, but the practice may obscure the future, low level exposure potential of the chemical residues. Biological monitoring of harvesters and residents is important when evaluating environmental residue data to refine measurements of potential human pesticide exposure.

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