

CHILDREN'S PESTICIDE EXPOSURE

A Community-Based Measurement Study

in Jacksonville, Florida

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Issue...

- Children are more vulnerable to pesticide exposures and these exposures may result in both short- and long-term health effects
- To address the Agency's goal of providing children with a safe and healthy environment, special childhood vulnerabilities to environmental contaminants must be considered in risk assessments
- The Food Quality Protection Act of 1996 (FQPA) requires that children's aggregate exposures to pesticides be considered during the tolerance-setting process
- Children's exposure and exposure factor data are very limited and require risk assessors to rely on conservative default assumptions in the regulatory process
- Children's exposure studies, especially for very young children, are required to generate critical exposure data and characterize activities and exposure factors that contribute to aggregate exposure

Approach...

- Collaborative project with CDC and the Duval County Health Department (DCHD)
- Designed as a three-tiered approach
 - Tier 1: Recruitment of 200 children into the study, completion of a questionnaire, collection of urine samples
 - Tier 2: Collection of environmental screening samples from 25% of the participants in tier 1
 - Pesticide inventory, surface wipes, transferable residues, time-activity diary, urine
 - Tier 3: Detailed exposure assessment in 9 homes from tier 2
 - Surface wipes, transferable residues, indoor/outdoor air, time-activity diary, pesticide residues on cotton socks, duplicate diet, urine
- Participation in tier 2 was dependent on the answers to the questions in the initial questionnaire on the frequency of use of pesticides
- Participation in tier 3 was dependent on both the answers to the pesticide-related questions in the initial questionnaire and the presence of pesticides in the home verified by a screening inventory

Organophosphates (OPs)	Pyrethroids
Dichlorvos	cis, trans, total Allethrin
Methamidophos	Resmethrin
cis, trans, total Mevinphos	Bifenthrin
Acephate	Sumithrin
Naled	Tetramethrin I, II, total
Demeton-S	lamda-Cyhalothrin
Fonofos	cis, trans, total Permethrin
Diazinon	Pyrethrin I, II
Diazinon oxon	Cyfluthrin I, II, III, IV, total
Disulfoton	Cypermethrin I, II, III, IV, total
Dimethoate	Esfenvalerate
Methyl Parathion	Delta/Tralomethrin
Chlorpyrifos	Phenyl-Pyrazole
Malathion oxon	Fipronil
Chlorpyrifos oxon	Synergist
Malathion	Piperonyl butoxide
Ethyl Parathion	
Methodathion	
Ethion	
Phosmet	
Azinphos-methyl	

Pesticides targeted for quantitation

Applicator	Type	No. Applications Last 6 months	Where Applied
Self/Family	Aerosol, fogger spray, baits, gels	1-168	Kitchen, Outdoors LR, BR, BA
Professional	Aerosol, fogger spray, baits, gels	1-24	Kitchen, laundry room BR, BA

Frequency of pesticide use and locations where pesticides are applied

Key Outputs...

- Successful community-based collaboration between DCHD, CDC, and EPA
- Knowledge of the current-use pesticides in the greater Jacksonville, FL area
- Data that reduce the risk assessor's reliance on default parameters in exposure and risk assessments for pesticides
- Identifying critical factors influencing children's exposures to pesticides
- Electronic databases of children's exposures
- Educational materials for public use

Impacts...

- Community-based collaborative efforts between federal and state agencies result in very successful studies
- EPA's regulations will be based on high quality, real world children's exposure and exposure factor data that reduces the reliance on conservative default assumptions and addresses special childhood vulnerabilities to environmental contaminants
- Children's exposure and exposure factor data will be readily available to identify critical exposure issues, generate new research hypotheses, and also to develop risk management strategies to reduce future exposures to pesticides



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