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CHILD ACCESSIBLE SURFACES AND OBJECTS
AND URINARY METABOLITE EXCRETION BY
CHILDREN FOR TWO-WEEKS AFTER CRACK-AND-
CREVICE APPLICATION**

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Chlorpyrifos Accumulation Patterns

Key Words: Chlorpyrifos, Child, Children, Pesticide, Crack-and-Crevise, Biomarker, Indoor Chemical Use.

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Abbreviations:

ng	nanogram	mg	milligram	%	percent
°C	degree Celcius	mL	milliliter	“	inch
CV	coefficient of variation	mm	millimeter		
dL	deciliter	mm Hg	millimeters of mercury		
g	gram	NOEL	No-observed-effect-level		
h	hour	r²	correlation coefficient		
kg	kilogram	µg	microgram		
L	liter	µL	microliter		
m	meter	µm	micrometer		

Outline:

Abstract, Introduction, Methods, Results, Discussion, Conclusions, References

Abstract:

The Children's-Post-Pesticide-Application-Exposure-Study (CPPAES) was conducted to look at the distribution of chlorpyrifos within a home environment for a 2-week period following a routine professional crack-and-crevice application, and to determine the amount of the chlorpyrifos that is absorbed by a child living within the home. Ten residential homes with a 2-5 year old child in each were selected for study, and the homes were treated with chlorpyrifos. Pesticide measurements were made of the indoor air, indoor surfaces and plush toys. In addition, periodic morning urine samples were collected from each of the children throughout the two-week period. The urine samples were analyzed for 3,5,6-trichloropyridinol, the primary urinary metabolite of chlorpyrifos, and the results were used to estimate the children's absorbed dose. Average chlorpyrifos levels in the indoor air and surfaces ranged from 26 (pre)/120 (post) ng/m³ and 0.48 (pre)/2.8 (post) ng/cm², respectively, reaching peak levels between days 0-2; subsequently, concentrations decreased throughout the 2-week period. Chlorpyrifos in/on the plush toys ranged from 7.3-1949 ng/toy post-application, concentrations increasing throughout the 2-week period demonstrating a cumulative adsorption/absorption process indoors. The daily amount of chlorpyrifos estimated to be absorbed by the CPPAES children post-application ranged from 0.04-4.8 µg/kg/day. During the 2-week period following the crack and crevice application, there was no significant increase in the amount of chlorpyrifos absorbed by the CPPAES children.