

COMPARISON OF SELF-REPORT VS. CARPET DUST SAMPLING TO ASSESS EXPOSURE TO PESTICIDES IN THE NORTHERN CALIFORNIA CHILDHOOD LEUKEMIA STUDY

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Background and Aims: Epidemiologic studies of childhood cancer typically rely on parents' reports of pesticide use to assess the child's exposure to home/garden pesticides. This approach is subject to recall bias. The Northern California Childhood Leukemia Study (NCCLS) is one of the few studies of this cancer to collect dust samples from participants' homes. Here, we examine the consistency between these two methods overall and by case/control status.

Methods: Carpet dust samples were collected from the homes of 296 cases and 333 population-based controls, and parents were queried about the use of pesticides to treat each of several types of pests during the previous year. We used Tobit regression to compare self-reported pest treatments with concentrations of 15 pesticide active ingredients in the dust, adjusting for other pest treatments.

Results: Associations between self-reported pest treatment and pesticide levels in the dust did not differ significantly between cases and controls. We found the strongest associations for professionally-applied insecticides. If insecticides were applied outdoors, cyfluthrin levels were six times higher (95% confidence level [CI]: 2.6-13.8), and cypermethrin levels were 2.5 times higher (95% CI: 1.1-5.4), than in homes without such treatment. For professional treatment indoors, cyfluthrin concentrations were 3.3 times higher (95% CI: 1.3, 8.6) than in homes without professional indoor treatment. Significant positive associations were observed for householder-applied pesticides (ants/cockroaches and cypermethrin; flying insects and cypermethrin, permethrin; fleas/ticks in the home and permethrin, piperonyl butoxide (synergist); fleas/ticks on pets and piperonyl butoxide; lawn/garden insects and cyfluthrin, chlorpyrifos; and lawn/garden weeds and dicamba, 2,4-D, MCPP). These associations are consistent with known uses of pesticide products.

Conclusions: Self-reported pesticide use was generally consistent with concentrations of expected pesticide active ingredients in dust samples, lending credibility to both methods. Further, the consistency of the associations among cases and controls provides evidence against reporting bias.