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Pesticide Exposure and Neurological Effects in Children of Nicaraguan Agricultural Workers, With an Ecosystem Approach

Rodriguez T; Van Wendel, B; Soto, A; Rojas, M; Wesseling, C

Epidemiology. 18:p S94, September 2007.

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Objective:

Families of agricultural workers in Nicaragua often have increased contact with pesticides in the general environment because they live near the pesticide-treated fields. Children often play and work in or near the treated fields. A previous study reported TCPY in applicators and their children (LOD 146.82 µg/L and LOD 125.13 µg/L respectively). Also, the urine levels of the general metabolites of pyrethroids, PBA, cis-DCCA, trans-DCCA, and DBCA exceed published background levels in children. The main objective of this study is to determine economic and social context of children's pesticide exposure and its neurological effects.

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Material and Methods:

The present study was performed in an agricultural community in the northwest of Nicaragua. We used an ecosystem approach to human health; community participation is assured throughout this study. We used focus group technique with parents and stakeholders to study cultural and social characteristics of the community. Researchers also observed and recorded the children's direct contact with pesticides, to identify potential factors for increase in exposure. Environmental and biologic samples are analyzed. A neurobehavioral test-battery, culturally appropriated, was developed in a workshop by experts from Canada, Latin America, and the United States with test to measure cognitive, motor, and sensitive development, and develop questionnaire. The neurobehavioral battery will be applied in 7- to 8-years-old children from a high- and low-exposed community. The field work started in April 2007.

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Results:

We present the results of sources, routes, and pathway of children exposure; results of focal groups; preliminary data of pesticide levels in drinking water, soil samples, household dust, and children urine samples; and the results of a pilot study with the neurobehavioral test-battery.

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Conclusions:

Conclusions of this study will be used by the community, stakeholders, and researchers to design a risk-reduction plan.

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