

US EPA ARCHIVE DOCUMENT

Pilot Study of Methods to Assess Infants' Pesticide Exposure and Response to Vaccination

Start Date: 1/2000

Completion Date: 8/2002

Project Purpose:

To assess pilot methods to recruit infants living along the US-Mexico Border, to assess their organophosphate pesticide exposure and immunologic function.

Project Description:

The goal of this Phase II project was to develop methods to assess very young children for pesticide exposure and immunologic function. Organophosphate pesticide exposure evaluation requires collection of urine from children who are not yet toilet trained. Collection of venous blood is needed to assess immunologic response to vaccination, yet is technically difficult in infants. Home assessment is an important component of exposure characterization in young children due to the potential for persistent contamination of house dust, yet researcher access to subject's homes may be variable depending on cultural norms and community characteristics.

Parents of children between 12 and 18 months of age who sought care at clinics in Imperial County, California for a first measles, mumps, and rubella vaccine (MMRII) were asked to participate in a pilot study to assess their child's pesticide exposure and response to vaccination. Methods to collect urine and venous blood samples were examined. The study consisted of an initial clinic visit followed by a home visit four weeks later to assess antibody response to vaccination. Blood and urine samples were obtained at each visit and proximity of the child's residence to agricultural fields was determined. Samples will be examined for organophosphate pesticide exposure and the child's antibody response to the measles component of the MMRII vaccination. Twenty children were enrolled in this study. We were able to recontact 18 children at the home visit. All participating children had detectable urinary metabolites associated with previous organophosphate pesticide exposure.

Accomplishments:

1/00 - 2/00 Data collection for Study Contact 1 - Clinic Contact

2/00 - 3/00 Data collection for Study Contact 2 - Home Contact

Ascertainment of effective methods to access and collect venous blood and urine from infants in border communities for Phase III Health Studies.

Publications:

Hilborn ED, Royster MO, Soukup JM, Bellini WJ, Barr DB, Walsh D, Becker S. *A pilot study of pesticide exposure and response to vaccination among toddlers*. In preparation.

Hilborn ED and Padilla S. *A dried blood spot method to evaluate cholinesterase activity in children*. Arch Env Hlth In press.

Elizabeth Hilborn, Debra Walsh, Pauline Mendola, Michael Royster. *Methods for Conducting a Field Study of Young Children* Journal of Children's Health. 2003;1(4):1-13.

Royster M, Hilborn E, Barr D, Carty C, Rhoney S, Walsh D. *A pilot study of global position system/geographical information system measurement of residential proximity to agricultural fields and*

urinary organophosphate metabolite concentrations in toddlers. Journal of Exposure Analysis and Epidemiology. 2002;12:433-440.

Brock JW, Caudill SP, Silva MJ, Needham LJ, Hilborn ED. *Phthalate Monoesters Levels in the Urine of Young Children.* The Bulletin of Environmental Contamination and Toxicology. 2002;68(3):309-14.

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