Urinary Pesticide Metabolite Concentrations in Pregnant Women from Suriname


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BACKGROUND

• In Suriname, pesticides are commonly used in both agricultural and residential settings.

• The Caribbean Consortium for Research in Environmental and Occupational Health (CCREOH) implemented an environmental epidemiology cohort study of 1100 pregnant women and their children residing in three areas of the country: Paramaribo, Nickerie, and the interior areas of Suriname (Figure 1).

Objective:

• To evaluate pesticide exposures in a sub-set of participants enrolled in the CCREOH cohort study.

METHODS

• Urine samples (25 ml) from 218 CCREOH participants were analyzed for 18 pesticide metabolites, representing 3 pesticide classes.

• Mann Whitney U and the Kruskal-Wallis tests were used to assess the differences between pesticide metabolite concentrations and the residential locations of the pregnant women in Suriname. Statistical significance was determined at p<0.05.

RESULTS

• Pesticide exposures varied based on area of residence probably due to different pesticide applications (Table 1).

• Pregnant women residing in Paramaribo had higher median concentrations of organophosphate metabolites compared to those living in Nickerie and the interior (Figure 2).

• Pregnant women residing in Nickerie had higher median concentrations of phenoxy acid herbicide and pyrethroid metabolites compared to those living in Paramaribo and the interior (Figure 3).

NEXT STEPS AND FUTURE ACTION

• An assessment of the associations between the biomarker data and potential adverse birth outcomes, as well as pediatric neurodevelopment.

• An evaluation of pesticide literacy regarding use, storage, and disposal with a primary public health goal of preventing exposures to pesticides in pregnant women.

• The development and implementation of effective interventions including strengthening policies to improve maternal and child health.