

# Health Effects of Pesticide Exposure in Latin American and the Caribbean Populations: A Scoping Review

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## Resumen

**BACKGROUND:** Multiple epidemiological studies have shown that exposure to pesticides is associated with adverse health outcomes. However, the literature on pesticide-related health effects in the Latin

American and the Caribbean (LAC) region, an area of intensive agricultural and residential pesticide use, is sparse. We conducted a scoping review to describe the current state of research on the health effects of pesticide exposure in LAC populations with the goal of identifying knowledge gaps and research capacity building needs. **METHODS:** We searched PubMed and SciELO for epidemiological studies on pesticide exposure and human health in LAC populations published between January 2007 and December 2021. We identified 233 publications from 16 countries that met our inclusion criteria and grouped them by health outcome (genotoxicity, neurobehavioral outcomes, placental outcomes and teratogenicity, cancer, thyroid function, reproductive outcomes, birth outcomes and child growth, and others). **RESULTS:** Most published studies were conducted in Brazil (37%, n = 88) and Mexico (20%, n = 46), were cross-sectional in design (72%, n = 167), and focused on farmworkers (45%, n = 105) or children (21%, n = 48). The most frequently studied health effects included genotoxicity (24%, n = 62) and neurobehavioral outcomes (21%, n = 54), and organophosphate (OP) pesticides were the most frequently examined (26%, n = 81). Forty-seven percent (n = 112) of the studies relied only on indirect pesticide exposure assessment methods. Exposure to OP pesticides, carbamates, or to multiple pesticide classes was consistently associated with markers of genotoxicity and adverse neurobehavioral outcomes, particularly among children and farmworkers. **DISCUSSION:** Our scoping review provides some evidence that exposure to pesticides may adversely impact the health of LAC populations, but methodological limitations and inconsistencies undermine the strength of the conclusions. It is critical to increase capacity building, integrate research initiatives, and conduct more rigorous epidemiological studies in the region to address these limitations, better inform public health surveillance systems, and maximize the impact of research on public policies.

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