Residential proximity to agricultural fumigant use and IQ, attention and hyperactivity in 7-year old children.

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Abstract

OBJECTIVES:
Our objective was to examine the relationship between residential proximity to agricultural fumigant use and neurodevelopment in 7-year old children.

METHODS:
Participants were living in the agricultural Salinas Valley, California and enrolled in the Center for the Health Assessment of Mothers and Children Of Salinas (CHAMACOS) study. We administered the Wechsler Intelligence Scale for Children (4th Edition) to assess cognition and the Behavioral Assessment System for Children (2nd Edition) to assess behavior. We estimated agricultural fumigant use within 3, 5 and 8km of residences during pregnancy and from birth to age 7 using California's Pesticide Use Report data. We evaluated the association between prenatal (n = 285) and postnatal (n = 255) residential proximity to agricultural use of methyl bromide, chloropicrin, metam sodium and 1,3-dichloropropene with neurodevelopment.

RESULTS:
We observed decreases of 2.6 points (95% Confidence Interval (CI): -5.2, 0.0) and 2.4 points (95% CI: -4.7, -0.2) in Full-Scale intelligence quotient for each ten-fold increase in methyl bromide and chloropicrin use within 8km of the child's residences from birth to 7-years of age, respectively. There were no associations between residential proximity to use of other fumigants and cognition or proximity to use of any fumigant and hyperactivity or attention problems. These findings should be explored in larger studies.