

ATRAZINE EXPOSURE FROM DRINKING WATER AND ADVERSE BIRTH OUTCOMES IN KENTUCKY, U.S.A.

Claudia Hopenhayn, *University of Kentucky, United States*

Jessica Rinsky, *University of North Carolina at Chapel Hill, United States*

Vijay Golla, *Western Kentucky University, United States*

Steve Browning, *University of Kentucky, United States*

Heather Bush, *University of Kentucky, United States*

Background and Objectives: Herbicide use is widespread worldwide, with atrazine being one of the most common in the U.S.A. and other countries. Recent studies suggest a possible association between atrazine exposure and adverse birth outcomes.

Kentucky, a largely rural state with high atrazine use, ranks among the highest in the U.S.A. in rates of prematurity and low birth weight. We examined the relationship between atrazine in drinking water and preterm births, gestational age and birth weight.

Methods: Kentucky birth certificate data were analyzed to assess birth outcomes and other individual-level covariates. Data from 2004-2006 were used for all singleton births to Kentucky residents. Atrazine levels in drinking water were assessed at the county level using data from the Department of Water and the Kentucky Geologic Survey. Counties were categorized into tertiles of atrazine exposure (high, moderate, low). Multivariate linear and logistic models were used to assess the potential risk contribution of atrazine to birth weight, gestational age and preterm births (<37 weeks of gestation).

Results: A significant risk was observed for preterm births for women residing in the high versus low exposure counties while controlling for relevant individual covariates (OR= 1.26; 95% CI 1.19, 1.33). Similar results were found for gestational age as a continuous variable, with a difference of -0.20 weeks (95% C.I. -0.25, -0.16), and for birth weight, with a decrease of -25.8 grams (95% C.I. -34.9, -16.6).

Conclusions: The results of this study indicated a modest association between atrazine exposure and adverse birth outcomes. The results were consistent with similar recent studies. However, due to the ecologic nature of the exposure assessment and the possibility of exposure misclassification further individual-level research is strongly recommended to assess the relationship between atrazine exposure and adverse birth outcomes.