

INDIVIDUAL EXPOSURES TO DRINKING WATER TRIHALOMETHANES AND THE RISK OF PRETERM BIRTH

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Background and Aims: Evidence for an association between exposure during pregnancy to trihalomethanes (THMs) in drinking water and preterm birth is still inconsistent and inconclusive, in particular, for various exposure routes. The aim of our study was to examine association between of internal dose of THMs and preterm birth in singleton newborns.

Methods: We conducted a prospective cohort study of pregnant women in Kaunas city, Lithuania. Preterm birth was defined as infant's whose gestational age was less than 37 weeks. In total 4.161 women were interviewed to collect personal data on various characteristics and water consumption habits. We used tap water THMs concentrations, geocoded maternal address at birth, individual information on drinking water ingestion, showering and bathing, and uptake factors of THMs in blood, to estimate an internal dose of individual THM. We examined the relation of THM internal dose to preterm birth with a multiple linear-regression models, adjusting for maternal education, family status, renal diseases, diabetes, cardiovascular disease, stress, body mass index, smoking, alcohol consumption, parity, previous preterm birth, and infant birth year.

Results: The estimated individual total uptake of THMs ranged between 0.0025 and 2.40 $\mu\text{g}/\text{d}$. THMs dose was associated with a slightly increased risk across three pregnancy trimesters. We found dose – response relationships for the entire pregnancy and trimester-specific brominated THMs internal dose and preterm birth. For a second trimester bromodichloromethane adjusted RR for second tertile was 1.79, 95% CI 1.03-3.13 and for third tertile it was 1.84, 95% CI 1.04-3.26. The risk increased by 21% per every 0.01 $\mu\text{g}/\text{d}$ increase in bromodichloromethane internal dose (OR 1.21, 95% CI 1.01–1.45).

Conclusions: There is some evidence for an association of THMs internal dose during pregnancy on preterm birth. Increased bromodichloromethane dose may affect preterm birth.