# TRIHALOMETHANES INTERNAL DOSE AND MATERNAL GSTT1 AND GSTM1 GENES POLYMORPHISM CONTRIBUTION TO THE RISK OF PRETERM BIRTH

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**Background and Aims:** There is some evidence that prenatal exposure to drinking water trihalomethanes (THM) has a detrimental effect on birth outcome. Both environmental factors and genes involved in metabolic detoxification process may be associated with preterm birth. The relationship between THM exposure and preterm birth in genetically susceptible subjects is not clear. The objective of this study is to investigate whether the polymorphisms of metabolic genes GSTT1 and GSTM1 affect the association of maternal exposure to THM with preterm birth.
**Methods:** We conducted a nested case-control study of 682 pregnant women in Kaunas (Lithuania) using individual information on water drinking, showering and bathing habits during pregnancy, and uptake factors of THMs in blood, estimated as internal dose of THM. We used logistic regression to evaluate the relationship between internal THM dose, preterm births and individual and the joint (modifying) effects of the metabolic gene polymorphisms controlling for family status, maternal smoking, body mass index, alcohol consumption, education, and infant birth year.
**Results:** The estimated individual total uptake of THMs ranged between 0.0025 and 2.40 μg/d. The findings suggest that carriers of the GSTM1–0 genotype and exposed to THM, chloroform and bromodichloromethane had an increased risk for preterm birth compared to carriers of the GSTM1–1 genotype: the ORs during the second trimester among woman GSTM1–1 genotype carriers were 1.0–1.11, while among GSTM1–0 genotype carriers ORs were 1.66–2.07. Exposure to dibromochloromethane during the first trimester among carriers of the GSTM1–1 genotype was associated with an OR of 7.35, 95% CI 2.62–20.6, and among carriers of the GSTM1–0 genotype produced an OR of 2.81, 95% CI 1.21–6.52.
**Conclusions:** These data suggest that THM internal dose may affect preterm birth and that maternal GSTM1 and GSTT1 genotypes modify the THM exposure effects on preterm birth.