

THE EFFECT OF DISINFECTION BY-PRODUCTS, WATER SOURCE, AND TYPE OF DISINFECTION IN PREGNANCY LOSS IN MASSACHUSETTS

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Background and Aims: Previous research suggests that exposure to different water sources, disinfection type (e.g., chlorinated surface water), and disinfection by-products (DBPs) may be associated with pregnancy loss. We assessed the potential risk of water source, disinfection type, and DBPs on pregnancy loss in Massachusetts.

Methods: We used birth and death certificate data on 510,264 pregnancies to examine this risk using 1998-2004 data from 275 Massachusetts towns. Fetal loss was defined as losses after the 20th week of gestation, and was examined using logistic regression.

Results: Based on 2,488 pregnancy losses, preliminary unadjusted results indicate that mothers using public surface water systems had an increased risk of fetal loss (Odds Ratios (ORs) =1.37; 95% CI: 1.24, 1.51) compared to mothers using ground water sources.

Following adjustment for confounding by maternal risk factors (i.e., age, race, education, tobacco use), and disinfection type, this risk was attenuated (OR= 0.98; 95%CI: 0.85, 1.13). Compared to untreated water systems, mothers using chlorinated and chloraminated public water systems had an increased risk of fetal loss with ORs of 1.15 (95%CI: 1.01, 1.33) and 1.36 (95% CI: 1.17, 1.58), respectively. ORs of 1.01 (95% CI: 0.85, 1.21) and 0.97 (95% CI: 0.79, 1.19) were found following adjustment for confounding by maternal risk factors and source water. No increased risk was found for the relationship between trihalomethanes (sum of chloroform, bromodichloromethane, dibromochloromethane, and bromoform) and fetal loss in any exposure category compared to the lowest (0 µg/L) category. Similarly, no increased risk was found for the relationship between haloacetic acids (sum of monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, bromoacetic acid, and dibromoacetic acid) and fetal loss in any exposure category compared to the lowest (0 µg/L) category.

Conclusions: Further analyses will include fetal loss data from 1996-1997 and will utilize other statistical approaches such as Poisson regression.