Abstract

This study aims to review epidemiologic evidence of the association between exposure to chlorination disinfection by-products (DBPs) and congenital anomalies. All epidemiologic studies that evaluated a relationship between an index of DBP exposure and risk of congenital anomalies were analyzed. For all congenital anomalies combined, the meta-analysis gave a statistically significant excess risk for high versus low exposure to water chlorination or TTHM (17%; 95% CI, 3-34) based on a small number of studies. The meta-analysis also suggested a statistically significant excess risk for ventricular septal defects (58%; 95% CI, 21-107), but based on only three studies, and there was little evidence of an exposure-response relationship. It was observed no statistically significant relationships in the other meta-analyses and little evidence for publication bias, except for urinary tract defects and cleft lip and palate. Although some individual studies have suggested an association between chlorination disinfection by-products and congenital anomalies, meta-analyses of all currently available studies demonstrate little evidence of such association.

Keywords

Birth defects, Congenital anomalies, Disinfection by-products, Fetal development, Reproductive health, Trihalomethanes.