

Is tap water safe for expectant mothers?

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Drinking water disinfected by chlorine while pregnant may increase the risk of having children with heart problems, cleft palate or major brain defects, according to a study published today in BioMed Central's open access journal *Environmental Health*.

This finding, based on an analysis of nearly 400,000 infants in Taiwan, is the first that links by-products of water chlorination to three specific birth defects.

Water chlorination is a widely used and efficient method to disinfect drinking water and reduce the occurrence of waterborne diseases. However, numerous studies have revealed the presence of many chlorination by-products in the water. Recent research suggests that prenatal exposure to these by-products may increase the risk of birth defects.

A research team led by Jouni Jaakkola from the Institute of Occupational and Environmental Medicine, University of Birmingham, UK, gathered data on almost 400,000 infants born in Taiwan. The researchers used statistical analyses to see if drinking tap water containing high, medium or low levels of chlorination by-products increased the risk of 11 common birth defects.

Although the researchers found no direct link between the prevalence of any birth defect and the level of exposure, their calculations revealed that exposure to high levels of by-products substantially increased the risk of three common defects: ventricular septal defects (holes in the

heart), cleft palate, and anencephalus (where neural development fails, resulting in the absence of a major portion of the brain, skull, and scalp).

Exposure to total trihalomethanes above 20 ug/L was associated with an increased risk of 50 to 100% compared with levels below 5 ug/L. These results were corroborated by additional analyses, using pooled data from a number of similar studies.

"The biological mechanism for how these disinfection by-products may cause defects are still unknown," says Jaakkola. "However, our findings don't just add to the evidence that water chlorination may cause birth defects, but suggest that exposure to chlorination by-products may be responsible some specific and common defects.

Whilst the benefits of water chlorination are quite evident, more research needs to be carried out to determine these side-effects"

Source: BioMed Central

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