

What is in Our Water, and Does it Cause Cardiovascular Disease?

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Several epidemiological studies have documented evidence of the relationship between the levels of magnesium and calcium in drinking waters and mortality from cardiovascular diseases (CVD). In this study we are reporting the magnesium and calcium concentrations, as well as the hardness of drinking waters obtained from surface, underground, municipal and bottled water sources in Decatur County Georgia were analyzed by using the EDTA titrimetric method. One of the bottled water analyzed was found to contain a high concentration of Ca at 158.08 mg/L (while its Mg content was not the highest at 11.52 mg/L) and hardness of 169.13 mg/L. The highest Mg concentration was found to be 21.77 mg/L from an underground water source, which also contain Ca and water hardness of 41.47 mg/L and 63.24 mg/L respectively. The Decatur County source supplying the residential and educational areas (elementary, secondary and college) were analyzed from water samples from these areas and the concentration of Ca varied from 40.07 mg/L to 44.25 mg/L, Mg from 3.06 mg/L to 4.37 mg/L. The water hardness found from these sources also varied from 44.09 mg/L to 47.31 mg/L. The surface water analyzed contained generally low concentrations of Ca, from 3.15 – 9.30 mg/L; and Mg from 0.38 – 2.43 mg/L. The water hardness obtained in surface water samples ranged from 3.66 – 33.05 mg/L. When these concentrations are compared to a ten year (1994 – 2003) cardiovascular diseases (CVD) occurrence in Decatur County, it does appear that there is a general correlation with the variations in the content of Ca and Mg. Bainbridge township in Decatur County, receives its drinking water solely from the municipal water, and it showed evidence of high cardiovascular deaths correlating with the soft water and low concentrations of Ca and Mg found in the drinking water. In the suburbs of Decatur County where their drinking waters are obtained from underground water sources, and these were analyzed to contain higher Ca and Mg contents, there is a general decrease in cardiovascular deaths recorded.