

## **ARSENIC IN DRINKING WATER - EXPOSURE AND A CLINICAL SURVEY, IN HURON COUNTY, MICHIGAN**

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### **ABSTRACT**

In 1981 sampling of nearly three hundred private residential water wells in Huron County, Michigan revealed 57 with total arsenic levels of 50 ppb (0.050 mg/l), or above. In order to investigate whether the increased amount of arsenic in drinking water was associated with urinary arsenic levels and whether water and urinary arsenic levels were associated with changes of some physiological and clinical variables, a pilot health effect study was initiated. Two indicators of arsenic exposure were used in the study: one was derived from arsenic water concentration level alone, the second from analysis of 24 hour urinary arsenic excretion. We found that there is a statistical significant rank correlation between well water consumption and urinary arsenic levels ( $r=0.236$ ,  $p=0.0058$ ). However, stratification for gender and age eliminates this association in men above the age of 14 ( $n=47$ ) and in children ( $\leq 14$  years,  $n=33$ ). For women ( $n=54$ ), however, the concentration of arsenic in urine increases with the concentration in drinking water ( $p=0.08$ ). Controlling for age and gender, a positive correlation between well water arsenic concentrations and the level of calcium in serum and the level of blood urea nitrogen in serum was identified. The results indicate that the intake of arsenic from private wells might be higher in women who are more likely to stay at home.