

# Link found between arsenic in drinking water and strokes

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(PhysOrg.com) -- A new study in Michigan in the U.S. suggests the presence of moderate levels of arsenic in drinking water could increase the risk of strokes.

Arsenic, a tasteless, odorless metal, is found naturally at low levels in the soil, rocks, some [fertilizers](#), and in dyes, paints, and wood preservatives. Exposure to high levels of arsenic has already been linked to an elevated risk of cancer, and chronic exposure to moderately high levels has been linked to [type 2 diabetes](#) and high blood pressure, but this is the first time a link to strokes has been proposed.

Statistics provided by the Centers for Disease Control and Prevention in the U.S. show that around 80 percent of [drinking water](#) in the U.S. contain arsenic at levels below 2 parts per billion (ppb), which is one fifth the maximum allowable level of 10 ppb (10 micrograms per liter) set by the Environmental Protection Agency (EPA). Around 2 percent of drinking water supplies contain arsenic levels of 20 ppb or greater.

The Michigan study looked for any link between the variations in arsenic levels in the state's drinking water supplies and the rate of hospitalization for stroke. Leader of the research team, Dr. Lynda D. Lisabeth from the University of Michigan in Ann Arbor, said the previously demonstrated links between arsenic levels and diabetes and [high blood pressure](#) made a link to strokes plausible. She also said chronic exposure to low levels of arsenic could accelerate atherosclerosis, which in turn can lead to strokes and heart attacks.

The researchers gathered Michigan state government data on water samples taken from 1983 to 2002 to estimate the arsenic exposure of residents of the 83 counties in the state. They found the median level of 1.8 ppb was well under the EPA limit, but arsenic levels in some areas of Michigan exceed the EPA limit, with about 230,000 people in the south east exposed to moderately elevated levels of around 20 ppb.

The team then correlated the data against hospital data on stroke admissions. Over the period of 1994 to 2006 there were over 294,000 hospitalizations for stroke in the state, and rates were slightly higher in counties with higher arsenic levels. The researchers also found rates of hospitalization for hernias and ulcers were higher in these areas, but these conditions have no known link to exposure to arsenic.

The hernia and ulcer findings suggest there may be a county level factor involved in the increased rate of strokes, rather than arsenic in the water, but when the researchers focused on Genesee County, which has historically high arsenic levels in drinking water, they found a correlation between the zip codes corresponding to areas with the highest arsenic levels and stroke hospitalizations, but no correlation with ulcers or hernias.

In Genesee County there were 14,033 hospitalizations for stroke during the period of the study, and the risk of stroke was more than double in the 20 percent of zip codes with the highest levels of arsenic over the 20 percent with the lowest arsenic levels.

The findings, published in the journal *Stroke*, are not conclusive and do not prove cause and effect, so further research is necessary to confirm the link. The findings also suggest in the majority of areas, where arsenic levels are at or below EPA recommendations, there is no increased hazard of stroke.

Dr. Lisabeth said most people need not be concerned about [arsenic](#) in their drinking water, but people with private wells should get their water tested and install reverse osmosis filters if levels are over the EPA recommendation of 10 ppb.

**More information:** Arsenic in Drinking Water and Stroke Hospitalizations in Michigan, Lynda D. Lisabeth, et al., *Stroke*. 2010;41:2499. [doi:10.1161/STROKEAHA.110.585281](https://doi.org/10.1161/STROKEAHA.110.585281)

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