

Environmental manganese good in trace amounts but can correlate to cancer rates

July 10 2009

In the first ecological study of its kind in the world, a Wake Forest University Baptist Medical Center researcher has uncovered the unique finding that groundwater and airborne manganese in North Carolina correlates with cancer mortality at the county level.

The study, titled, "Environmental [Manganese](#) and [Cancer](#) Mortality Rates by County in North Carolina: An Ecological Study," was published online last month by *Biological Trace Element Research*. Lead researcher John Spangler, M.D., professor of family and community medicine at Wake Forest Baptist, found that groundwater manganese appears to be positively associated with total cancer, colon cancer and [lung cancer](#) death rates, while airborne manganese concentrations appear to be inversely associated with total cancer, [breast cancer](#) and lung cancer death rates.

"People need manganese in trace amounts, but if you get too much of it, manganese can be dangerous," Spangler said. "It's my hope that the impact of this study will be to spark additional interest and research. This really just raises the concern that something may be going on and argues for further research into these issues."

To determine whether environmental manganese is related to cancer at the county level in North Carolina, Spangler conducted an ecological study using data from the North Carolina State Center for Health Statistics, North Carolina Geological Survey, U.S. Geological Survey, and U.S. Census.

He found that airborne manganese was associated at the county level with an 14 percent decrease in total cancer deaths, a 43 percent decrease in breast cancer deaths and a 22 percent decrease in lung cancer deaths. Additionally, Spangler found there was up to a 28 percent increase in county-level colon cancer deaths and a 26 percent increase in lung cancer deaths at the county level related to elevation of manganese in groundwater as opposed to air.

"That's pretty astounding. These are the first data we know of to document a potential relationship between environmental manganese and population-level cancer death rates," Spangler said. "The positive association between groundwater manganese and specific cancer mortality rates might be a function of the high concentrations measures, while the inverse relationship between air manganese and death rates might point toward adequate (e.g. healthy) county-level manganese exposures."

Spangler points out that because manganese now replaces lead in gasoline globally, the amount of manganese in the environment is increasing and may worsen the groundwater concentration numbers in the future. The effects of these ecological findings should be confirmed at the individual level or in animal models, he said.

Source: Wake Forest University Baptist Medical Center ([news](#) : [web](#))

Citation: Environmental manganese good in trace amounts but can correlate to cancer rates (2009, July 10) retrieved 19 April 2024 from <https://medicalxpress.com/news/2009-07-environmental-manganese-good-amounts-cancer.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.