

# Moderate arsenic in environment tied to higher heart attack, stroke risk

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Photo: Robin Foster

Researchers suspect groundwater and certain foods raised levels of chemical in study of Native Americans.

(HealthDay)—People chronically exposed to low to moderate levels of arsenic in their environment may be more likely to suffer a heart attack, stroke or other cardiovascular disease, a study of American Indians suggests.

Previous research has linked exposure to high levels of arsenic in drinking water (more than 100 micrograms per liter) with [coronary heart disease](#), stroke, [peripheral artery disease](#) and carotid atherosclerosis.

Environmental health researchers decided to explore whether exposure to the lower levels of arsenic more commonly found in drinking water or food also would increase the risk of [heart disease](#).

"We didn't know what would happen at levels that occur regularly in the United States," said study author Dr. Ana Navas-Acien, a researcher in the department of [environmental health sciences](#) at the Johns Hopkins Bloomberg School of Public Health.

Regular exposure to more common levels of arsenic did indeed correlate to increased risk of fatal and nonfatal cardiovascular disease, even after adjusting for other risk factors such as smoking, obesity and [cholesterol levels](#), according to the findings, which were published in the Sept. 24 issue of the journal *Annals of Internal Medicine*.

"It's a chronic long-term health effect," Navas-Acien said. "We need to understand that cardiovascular disease is a very complex illness, and there are many [environmental risk factors](#) like arsenic which can contribute."

Although the study found that relatively common levels of arsenic in drinking water were associated with a higher risk of heart disease, it did not prove a cause-and-effect relationship.

The researchers studied nearly 3,600 American Indian men and women living in Arizona, Oklahoma, North Dakota and South Dakota, beginning in 1989 and following up with them through 2008.

Groundwater likely provided the major source of [arsenic exposure](#) in Arizona and the Dakotas, researchers said. Private wells in those states often exceed the U.S. standard for arsenic in drinking water of 10 micrograms per liter, and are sometimes as high as 50 micrograms per liter.

Oklahomans likely were exposed to arsenic through their food, with potential sources including rice, flour and other grains, the researchers wrote.

Study participants provided urine samples that the research team used to estimate their exposure to inorganic arsenic.

Of the participants, nearly 450 died of cardiovascular disease and almost 1,200 developed either fatal or nonfatal cardiovascular disease. Researchers found that a person's risk of death from cardiovascular disease increased with their arsenic exposure.

The one-quarter of patients who showed the highest levels of arsenic in their urine had about a 50 percent increased risk of death by heart attack or stroke compared to those with the lowest levels of arsenic, Navas-Acien said.

Arsenic exposure also was associated with an increased risk of developing [cardiovascular disease](#).

"The paper is very important," said Alice Lichtenstein, a distinguished professor of nutrition science and policy at Tufts University. "It's an area where we need to look more carefully. It gives other research groups another variable to address." She was not involved with the study.

Lichtenstein, however, noted that the study did not draw a direct link between arsenic and heart disease, but instead found a correlation between the two.

"We don't know what the direct effect is. What is important is that we gather more information, which I hope will be done promptly," said Lichtenstein, who also is the director of the cardiovascular nutrition laboratory at the university. "We should not discount this. It's very important. But I think we need a little more information."

People who are concerned about their arsenic intake should have their drinking water tested, Navas-Acien said.

"In particular, people who live in small communities or have private wells should be aware of the arsenic levels in their drinking water," she said. "If you use groundwater and you don't know the levels of arsenic in your [drinking water](#), that can be quite dangerous."

Lichtenstein and Navas-Acien agreed that people concerned about arsenic also should mix up their diet.

"The best advice we can give people is to eat food that comes from a variety of different regions, as opposed to being raised in a single location," Lichtenstein said.

People also should vary their day-to-day eating patterns, Navas-Acien said.

"There are children out there who drink apple juice every day," she said. "That's risky because we know there are elevated [arsenic levels](#) in juice. People need to diversify their diet."

In July, the U.S. Food and Drug Administration proposed a threshold for [arsenic](#) levels in apple juice.

**More information:** To learn more about arsenic in drinking water, visit the [U.S. Environmental Protection Agency](#).

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