

## In India, Arsenic in Water Perplexes Researchers

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*Arsenic and Old Lace* fans beware: you won't be able to guess "whodunit" in this mystery of arsenic poisoning. Karen Johannesson, professor of earth and environmental sciences at Tulane, one of the "detectives" on the case, says the situation is too complicated for easy answers.



Geochemist Karen Johannesson, center, and grad student Jade Haug, right, are trying to find the cause of poisonous arsenic in drinking water in India. (Photo by Saugata Datta)

Two decades ago, the government in West Bengal, India, encouraged people to drink groundwater instead of contaminated surface water. Over time, the groundwater drinkers began to show signs of arsenic poisoning, including discoloration of their hands and feet and higher than normal rates of certain cancers. Enter [Johannesson](#), who is trying to determine the cause of arsenic levels that are 400 times higher than is considered safe by the World Health Organization.

"What are the processes that are occurring in these systems that are leading to very

high concentrations in the waters? It is completely naturally occurring, which actually makes it more complicated," she explains. Johannesson and her collaborators, including graduate student Jade Haug, have been collecting groundwater and sediment samples to analyze the concentrations of arsenic.

"We are also doing microcosm experiments to sort out whether the arsenic is there by biologic processes or is microbially driven," says Johannesson. She adds that it is possible for villagers to filter arsenic out of water using iron filings, but ultimately everyone is hoping for a permanent upstream solution.

A returned Peace Corps volunteer, Haug says the situation is frustrating to researchers and Indian villagers alike. "You go there and you can see tension in their faces, that they have had researchers coming in and out, but no one can tell them how to stop the arsenic poisoning. They just want an answer."

Johannesson and colleagues have applied to the National Science Foundation for funding to complete their detective work.

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