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The iron oxide nanoparticles instinctively bind to arsenic, so they provide a cheap way of extracting the harmful chemical from drinking water reserves  
CBEN / Rice University via EurekAlert

## [Nanorust Technology to Help Rid Water of Arsenic](#)

*The method will be tested in Mexico*

Experts at the Rice University have recently announced the completion of their latest water-purifying technology, which makes use of nanotechnology to destroy arsenic. The new, revolutionary and low-cost nanorust technique will begin its testing runs in Guanajuato, Mexico, later this year. If it works, it could provide those regions of the world where water is scarce or of poor quality with an affordable tool of obtaining fresh drinking water for the general population.

"Mexico's debating the adoption of more stringent national standards for allowable levels of arsenic in drinking water, and officials in Guanajuato are looking ahead to explore ways they might meet stricter new standards," the Rice University Pitzer-Schlumberger Professor of Chemistry, Vicki Colvin, who is also the inventor of nanorust, explained. The scientist is also the director of the Center for Biological and Environmental Nanotechnology (CBEN) at the university.

Located about 230 miles Northwest of Mexico City, Guanajuato is a relatively small town, with a population of only 80,000. The CBEN faculty, staff and students have been visiting the region regularly since last year, and have already succeeded in setting up the necessary infrastructure for the trials. The issue that the people have, with their arsenic-laden waters, is not by far an isolated one, but stretched across the entire world, from Asia, Africa, and North America, to South America and Europe.

The nanorust is, in fact, made up of iron oxide particles, but they are smaller than any living cells. The metal binds instinctively with arsenic, which is a colorless, odorless, and tasteless element. With prolonged exposure to the chemical, a number of medical conditions could ensue, ranging from skin discoloration and overall feelings of sickness to various types of cancer. Since 2006, the Rice University team has proposed iron oxide nanoparticles as the best solution to cheaply remove arsenic from drinking water reserves.

"Our studies of nanorust have progressed rapidly over the past three years, but in order to move this technology toward practical application there is really no substitute for this type of field test," CBEN faculty water treatment expert Qilin Li said. The scientist is also an assistant professor of civil and environmental engineering at the university. "One collateral benefit of the nanorust filters is that they may also help remove water-borne viruses that are responsible for a wide variety of gastrointestinal diseases," the George R. Brown Professor of Engineering, Pedro Alvarez, who is also the chair of the Department of Civil and Environmental Engineering at RU, concluded.