Health & Medicine

Earth Institute Targets Safe Drinking Water

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Safe drinking water is hard to find in rural Bangladesh. Microbes contaminate much of the surface water, and many of the country's wells contain naturally occurring arsenic. Researchers from Columbia University's Earth Institute, the Mailman School of Public Health, and the departments of statistics and political science have developed new technologies including a cell-phone-based data-collection system and a needle sampler to test water for arsenic levels. Alexander van Geen, a senior researcher with Lamont-Doherty Earth Observatory, leads the studies.

The research team has developed a phone-in data system containing information scientists can use to estimate the likelihood that a particular location has low-arsenic water and is safe for installing new wells. Once a site has been selected, another Columbia team uses the needle sampler device to test whether the water is safe during drilling and before the well is actually installed. The hope is that these technologies can be used to avoid the wasted effort and expense of digging wells that turn out to be contaminated.

There isn't one simple solution, says Andrew Gelman, a Columbia professor of statistics and political science who helped develop procedures for the phone-in data system. "Rather than just predicting if arsenic levels in a well are high, for example, we want to coordinate information so people can make decisions," he says.

Recent estimates show that more than 100 million people in rural South Asia regularly use water containing unsafe levels of arsenic, and this water is causing a serious health crisis in Bangladesh. According to Joseph Graziano, associate dean of research and professor of environmental health sciences and pharmacology at the Mailman School of Public Health, the health problems resulting from the water include cancers of the skin, bladder, lung, and liver; skin lesions that can become

malignant; and cognitive defects in young children.

“We’re talking about potentially helping millions of people,” says Gelman.



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