

Carolina students bring fresh water to Cambodian school children

BY EMILY J. SMITH

Throughout many parts of Asia, naturally-occurring arsenic in groundwater is a critical public health problem. Chronic arsenic exposure has been linked to cancer of the skin and internal organs, lowered birth weights in babies, increased incidence of respiratory disease, hearing loss in children, impaired skin sensation and other health problems.

Five students from the UNC School of Public Health set out in August 2006 to solve this problem—for 1,200 students at a primary school outside Phnom Penh, Cambodia. As members of the UNC chapter of Engineers Without Borders, UNC volunteers worked with the community of Dey Ut to create an alternative source for the school's drinking water, replacing an arsenic-contaminated well.

Volunteers helped design and build a rainwater harvesting system and plan for the project's sustainability through community involvement and education. Dr. Francis DiGiano, professor of environmental sciences and engineering at Carolina's School of Public Health, served as an advisor for the project. Numerous other UNC School of Public Health students helped plan and fundraise for the project.

Working with the Cambodian-based nonprofit organization Resource Development International, volunteers in Cambodia helped build three 30,000 liter tanks fed by rainwater harvested from the

Reed Palmer (left) poses with three Cambodian school children. Palmer was one of five UNC School of Public Health students who traveled to Cambodia in August 2006 to help create an alternative source of drinking water for the school in the community of Dey Ut. The existing source had been an arsenic-contaminated well. Naturally-occurring arsenic in groundwater is a critical public health problem throughout many parts of Asia.



UNC School of Public Health students who volunteered in Cambodia include Dr. Joe Brown; Angella Rinehold and Reed Palmer, both 2006 master's degree graduates in environmental sciences and engineering; Joshua Hunn, a 2007 master's degree graduate in environmental sciences and engineering; and Jamie Perin, a doctoral candidate in biostatistics at UNC.

roofs of three school buildings. UNC volunteers also designed a "foul-flush system" that captures the first rainwater that lands on each roof and diverts it away from the holding tanks. The first flush of water often contains dust, insects, bird waste and other debris that could compromise the holding tank water quality. After the water is flushed, it flows into the holding tanks. Ceramic filters are in each school classroom to further filter the water.

Funding for the project came from the North Carolina and Cambodian Rotary Club chapters, the Student Global Health Committee, and many other donors, including students and faculty in the UNC School of Public Health.

The UNC chapter of Engineers Without Borders was founded in 2004 by Dr. Joe Brown, a 2007 doctoral degree graduate in environmental sciences and engineering and other graduate students in the School's Department of Environmental Sciences and Engineering. More information about the organization can be found at www.unc.edu/ewb-usa. A description of the Cambodia work is listed under "projects." ■