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SLINING / JENNIFER SMITH / MARK SOBSEY / ILENE SPEIZER / WILLIAM VIZUETE / SHARON WEIR / KARIN YEATTS / STEVEN ZEISEL / CHONGBEN ZHANG

Preventing environmental risk and redefining policy

For more than 70 years, UNC environmental scientists and engineers have helped implement programs and policies that improve people's lives by preventing illness and disease. They now face new and greater challenges resulting from overpopulation, limited access to clean drinking water and sanitation facilities, an excess of human-made toxins and the rapid onset of global climate change.

Examples include:

- In August 2000, ozone levels in Houston, Texas, surpassed those in every other U.S. city. Government and industry officials turned to Dr. Harvey Jeffries for help. Jeffries and a team that included Dr. William Vizuete discovered two key causes of ozone, one common to other cities and the other unique to Houston's mix of industries. "Their work led the state agency to implement targeted emissions controls," says doctoral student and researcher Evan Couzo. "Houston now has the lowest ozone observed in 40 years."
- In the United Arab Emirates (UAE), Dr. Karin Yeatts and colleagues studied health effects of indoor air pollutants including incense and tobacco smoke. Results, recently published in *Environmental Health Perspectives* (*http://tinyurl.com/UAE-indoor-air*), indicate that family members with measurable air pollutant concentrations in their homes were twice as likely to report asthma and wheezing symptoms. Yeatts' work is part of the UNC-UAE National Strategy for Environmental Health Project.

"Globally, around 2.4 million deaths (4.2 percent of all deaths) could be prevented annually if everyone practiced appropriate hygiene and had good, reliable sanitation and drinking water."

—Dr. Jamie Bartram, director, The Water Institute at UNC

Dr. Mark Sobsey

Dr. William Vizuete

Dr. Karin Yeatts

- Drs. Jamie Bartram and Mark Elliott explain how water technologies and practices—such as rainwater harvesting and improved infrastructure integrity—can make water and sanitation systems more resilient to climate change. In the guidebook *Technologies for Climate Change Adaptation—The Water Sector* (*http://tinyurl.com/water-handbook*), co-authored with Institute researchers Joseph LoBuglio and Andrew Armstrong, Bartram and Elliott suggest how climate change can be seen as an "opportunity for focus upon, and gains in, health development and water resources sustainability." The guidebook, funded by United Nations Environment Programme (UNEP) Risoe Center, has been distributed to more than 500 stakeholders worldwide.
- Dr. Mark Sobsey and his former student Dr. Joe Brown evaluated effectiveness of household water treatment interventions in Cambodia. They found that use of a low-cost ceramic filter to treat drinking water in more than 100,000 households reduced E. coli, a key indicator of diarrhea, by about 98 percent (See *http://tinyurl.com/cambodia-water.*)

—Melissa Geil

Researchers featured in this article include:

- Andrew Armstrong, doctoral student, environmental sciences and engineering (ESE)
- Jamie Bartram, PhD, professor, ESE; director, The Water Institute at UNC
- Joe Brown, PhD, PE, UNC alumnus; assistant professor, London School of Hygiene and Tropical Medicine, U.K.
- Evan Couzo, doctoral student, ESE
- Mark Elliott, PhD, postdoctoral research associate, The Water Institute at UNC
- Harvey Jeffries, PhD, professor emeritus, ESE
- Joseph LoBuglio, ESE doctoral student and program manager, The Water Institute at UNC
- Mark Sobsey, PhD, Kenan Distinguished Professor, ESE
- William Vizuete, PhD, assistant professor, ESE
- Karin Yeatts, PhD, research assistant professor, epidemiology