Improved sanitation vital to safe drinking water

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September 10, 2013 – To help ensure clean drinking water for future generations, it is important to understand the links between clean water and sanitation. Antiquated sanitation systems must be replaced in many parts of the world, particularly in developing nations. That was the message delivered at the summer's final Hot Topics lecture, "Today: Water and Health: A Global Perspective," held in August at Harvard School of Public Health. The issue is of critical importance as water shortages are predicted to strike the U.S., Asia, and other parts of the world by 2025.

"There are an estimated 1.8 million deaths per year to inadequate water and sanitation," said James Shine, senior lecturer on aquatic chemistry in the Department of Environmental Health at HSPH, who delivered the talk. That works out to a child dying approximately every 20 seconds due to inadequate water and sanitation issues, he said, noting that young children are particularly vulnerable to waterborne diseases such as diarrhea.

Approximately 780 million people globally lack access to safe drinking water, and 2.5 billion lack adequate sanitation facilities said Shine. "Getting clean water to people in developing nations often is not the problem – it's poor sanitation. Often open defecation or contamination by livestock walking in the water ruins the water supply," he said.

Many sanitation systems, such as trenches, need to be connected to sewer or septic systems; and open trenches or public elimination has to be addressed by installing latrines, said Shine. Many latrines need to be replaced with models that control for flies that also can spread disease.

The Millennium Development Goals (MDGs) for water and sanitation call for a 50% reduction in the number of people without sustainable access to safe drinking water or sanitation by 2015 relative to 1990 levels. China and India have made great strides on drinking water coverage, and on a global basis, the MDG for water has already been met. However, sub-Saharan Africa is not on track to meet the water goals. With respect to the sanitation goal, the MDG clearly won't be met. For example, 41% of the people in southern Asia still use open defecation as their primary form of sanitation.

'Water stress'

Despite all the blue areas representing water on a world map, the amount of surface water

available for people to use is tiny. Ninety-seven percent of the earth's water resides in oceans; over 2% resides in polar ice caps. The rest is ground water, mostly deep in the earth and inaccessible, said Shine. That leaves a small pool of water available at any one time.

Shine presented data showing regions of the earth where "water stress" (lack of supply to meet demand) exists or is predicted. Shortages already exist in Spain, parts of Africa, and Asia, and are developing in Mexico. "By 2025, it's projected there will be water stress in the U.S., western Europe, China, India, Middle East, and other parts of Africa," Shine said.

Poor sanitation and water systems take an economic toll. UNICEF estimates women and children spend considerable time each day fetching water instead of going to school or spending time more productively. "Access to adequate water and sanitation can in fact be good for education in the developing world, particularly for girls," Shine said.

Watch the Hot Topic lecture

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Bottled water given the boot (HSPH News)

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–Marge Dwyer