Discovery News

Bottled Water Carries Hidden Cost to Earth - April 6, 2009

$1.79 might seem like a small price to pay for a bottle of water. But it costs the Earth far more than that. Compared to a liter of tap water, producing a liter of bottled water requires as much as 2,000 times more energy, according to the first analysis of its kind. The study also found that our nation's bottled water habit sucked up the equivalent of 32 to 54 million barrels of oil last year.

"The bottom line is that we should understand better the implications of our choices," said Peter Gleick, president of the Pacific Institute for Studies in Development, Environment, and Security in Oakland, Calif. "It suggests more ways to reduce energy use than maybe we otherwise think of."

Bottled water is a big business that is rapidly getting bigger. From 1976 to 2007, the average amount of bottled water drunk per person per year in the United States jumped from about 6 liters (1.6 gallons) to 116 liters (30.6 gallons).

In 2007, the last year for which numbers are available, Americans purchased more than 33 billion liters of bottled water. Globally, the number was 200 billion liters.

Even just since 2001, bottled water sales have increased by 70 percent in the U.S. We now buy more bottled water than either milk or beer.

But as consumption has gone up, so too have worries about what our drinking habits might be doing to the environment.

"It's a big deal," Gleick said. "And yet, no one had looked at all of the energy that goes into it. We didn't know."

To find out, he and a colleague considered three case studies: water that was bottled and used in Los Angeles; water bottled in the South Pacific and sent by cargo ship to L.A.; and water bottled in France and shipped in various ways to L.A. For each scenario, the researchers looked at all the energy involved in collecting, treating, bottling, labeling, packaging, cooling, and transporting the liquid.

For water that is consumed near its source, producing PET plastic bottles is the most energy-intensive step, according to their results, which appeared in the journal *Environmental Research Letters*. For bottles that make longer trips, transportation has the biggest impact.

In other words, buying water that was bottled near your home rather than in places like Fiji can help reduce your carbon footprint. Better yet, Gleick said, put away your wallet and turn on the faucet instead.
"We have very good tap water in this country," he said. "It's cheap. It's readily available. And it's much lower in energy use."

The research also shows how simple choices can have a significant impact on the environment.

"One of the conclusions we can all draw from this study is that novel materials and low-carbon energy can help," said Daniel Kammen, co-director of the Berkeley Institute of the Environment at the University of California, Berkeley. "But our own behavior is critical to cutting down not just physical waste, but also carbon waste."