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Quenching the thirst for clean, safe water

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A family poses with a household foam water filter in Ghana, Africa. Credit: Photo by Amway

It is estimated that one in nine people globally lack access to safe water. Michigan State University researchers are looking to fill that critical

need and provide safe drinking water to the most remote locations in the world with a new foam water filter that significantly reduces dangerous pathogens in drinking water.

"The foam filter is the first of its kind to address a wide range of the biological and economic factors that hinder development of remote water filtration systems," said Joan Rose, Homer Nowlin Chair in water research and author of the study. "This filter is easier to use and more effective than traditional methods."

Published in the *American Journal of Tropical Medicine and Hygiene*, the study examined a multibarrier biofilm foam filter, designed and manufactured by Amway, as a low-cost alternative to existing household filtration methods.

"The foam filter combines existing water treatment principles and is evidence that conventional municipal water treatment processes can be reinvented into a small, light and portable system," Rose said.

The filter features a unique biological layer, which allows organisms within the foam to attack foreign pathogens as water passes through. Growth of 'friendly' microorganisms in this layer enable the filter to become more efficient at reducing protozoa, bacteria and viruses over time. The newly discovered material also has other advantages such as ease of use, maintenance and affordability.

Many existing filtration methods do not effectively reduce microbial levels and can be complex to use and tedious to maintain. Communities that take ownership of water supply maintenance and sustainability successfully become invested in that supply, according to Rose.

"An entire community is affected by the quality of their water," Rose said. "A disease outbreak among members may be traced back to the

water source, so the methods these communities rely on need to be effective and sustainable."

Next steps for the filter include field studies at the Crow Reservation in Montana, and in a small village outside of Tamale in Ghana. Ongoing research on the foam filter will be conducted by a collaborative multi-institutional research team with members from MSU, Montana State University, University of Arizona and University of North Carolina.

More information: *American Journal of Tropical Medicine and Hygiene*, www.ajtmh.org/content/92/4/765.full

Provided by Michigan State University