Solar Cookers International

The Portable Microbiology Laboratory: A major breakthrough for water testing in developing countries

Did you know there is a simple and effective water testing kit currently available that can be used by local populations in developing countries to conduct disease risk assessments of their own water sources?

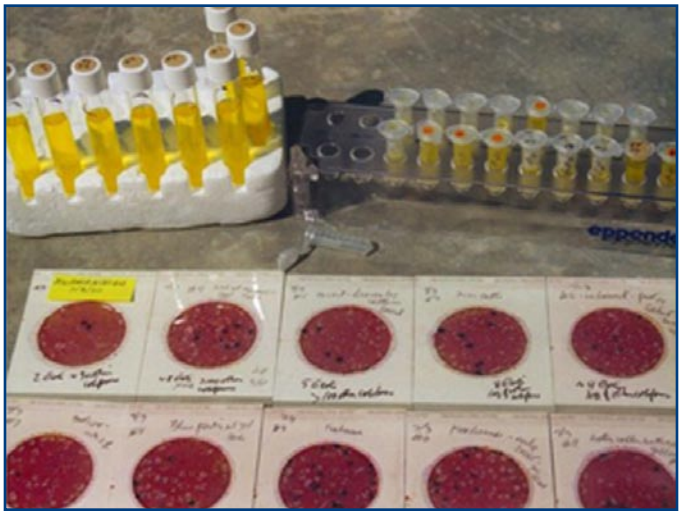
Developed by Solar Cookers International (SCI) for easy use in the field, the Portable Microbiology Laboratory (PML) is a gallon-sized kit that includes enough materials to conduct 25 tests. Each PML contains the best tests for *E. coli* in water and food – Colilert® by IDEXX and Petrifilm™ by 3M – along with Whirl-Paks collection bags, sterile plastic pipettes, and a battery-operated UV light for Colilert.

Typical water source found in sub-Sahara Africa

The two tests are specific for *E. coli* because they contain a substrate for the Beta-glucuronidase enzyme which is produced by *E. coli*, but not by environmental coliforms. Ready within 12-18 hours, the test results provide a disease risk assessment of water sources as outlined by the World Health Organization's Guidelines for Drinking Water Quality (2nd Edition):

Risk Level	E. Coli in Sample	Colilert MUG+	# Blue Colonies on Petrifilm
Low	<1/10 ml	-	0
Moderate	1-10/10 ml	+	0
High	1-10/ml	+	1-10
Very High	>10/ml	+	>10

Contents of Portable Microbiology Laboratory



Colilert® and Petrifilm™ test results

The success of the PML has been demonstrated at SCI-sponsored workshops conducted in Tanzania and Kenya, where local people were taught to perform tests on their water sources, incubate the tests overnight, and interpret the tests the next day. The two-day workshops help demystify microbiology by explaining how invisible bacteria can multiply rapidly to become millions and billions of cells, as the Colilert® and Petrifilm™ tests show.

To address water sources that pose a high disease risk, SCI promotes solar water pasteurization through the introduction of other simple and effective technologies. These include a low-cost solar cooker, the CooKit, and a reusable Water Pasteurization Indicator (WAPI) that verifies when pasteurization has occurred. Because most of the world's 1.1 billion people who lack access to safe water are among the 2.4 billion who engage in the unsustainable practice of using wood to cook, SCI also promotes the CooKit as part of an integrated solution to the economic, health and environmental problems associated with wood fuel consumption.

Supported by the Richard and Rhoda Goldman Fund, SCI recently launched a Safe Water Project in Kenya. This project provides training and materials for the Water Resources Management Authority and the Ministry of Public Health and Sanitation. The purpose of the project is to develop a model that uses simple and effective technologies for making world-class water testing widely available throughout the developing world, ultimately leading to a decrease in water related disease and illness.

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Solar water pasteurization using the CooKit

Reusable Water Pasteurization Indicators (WAPIs)

Petrifilm test results of Tanzania village water sources explained

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