Microbial water testing kit

Country of origin | United States of America

Health problem addressed
According to WHO, 1.8 million people die each year of diarrheal diseases, the majority of whom are <5 years old. One step towards addressing this problem is having simple, low-cost methods to determine drinking water safety. Current methods of testing are expensive, require complex lab set-ups and trained technicians to conduct tests.

Product description
The kit is designed for users to easily complete microbial water testing under field conditions in the developing world. The kit consists of the 10 ml colilert test, 1ml petrifilm test, sterile sampling bag, sterile, individually-wrapped, graduated 1 mL pipettes, a blacklight, cooler bag, icepack, a wastebelt incubator and simple instructions.

Product functionality
The product contains two tests that together check for total colifoms and E. coli, standard indicators for microbial water quality in a statistically significant manner. The colilert test consists of a tube to which 10 ml of water is added where the petrifilm requires just a 1ml addition to its film. Both tests are incubated for 24 hours.

Developer's claims of product benefits
This product can be used by professionals and untrained individuals alike, empowering communities to take control of their own water sources. Both tests and the kit as a whole have been demonstrated to correlate in a significant way to the other product standard at a fraction of the cost.

Operating steps
Collect a sample water using the sterile sampling bag. Keep on ice if not tested immediately. Open the Colilert tube and add 10 ml of the sample. Cap and shake. Using a 1ml pipette, add sample water to the petrifilm. Roll the cover over the surface to minimize air bubbles. Place both tests in your wastebelt incubator for 24 hours. Read results.

Development stage
The original invention is by Prof. Robert Metcalf, with contributions made by Susan Murcott to improve to portability of the kit. The product has been promoted in Kenya and distributed widely among student and faculty groups at MIT, Harvard & SUNY over the past three years for testing in developing countries. In 2010, Chuang, P., a MIT Masters student, compared the results of this kit to others in over 550 samples from the Philippines and Boston, MA. Currently these kits are being distributed on a small scale by Susan Murcott; there are efforts underway to move toward commercialization and increased capacity of production.

Future work and challenges
Currently we are looking for assembly facilities in China or India in order to be able to meet large scale demand by the fall of 2011.

Use and maintenance
User: Professionals and untrained users alike
Training: Basic demonstration of proper execution and interpretation of the test. Approx. 20 min.
Maintenance: Technician

Environment of use
Setting: At home and primary health facilities in rural and urban settings.
Requirements: No lab facilities required. If a lab is available, an incubator can be used instead of the waistbelt incubator; electric incubation is not required for obtaining proper test results.

Product specifications
Dimensions (mm): 300 x 150 x 180
Weight (kg): 1.36
Consumables: All items in the kit except the cooler, icepack, blacklight and waistbelt incubator are consumables.

Retail Price (USD): Varies on kit size. $47 (10 tests), $146 (25 tests), $253 (50 tests), up to $466 (100 tests).
Other features: Portable; cooler, icepack, blacklight and waistbelt incubator reusable.

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