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### *Coliform test kit for Venezuela [Discussion paper]*

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## Coliform test kit for Venezuela

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THE PRESENCE OF coliform bacteria is the internationally accepted indicator of fecal contamination. Accordingly, a number of laboratory tests have been devised for screening potable water samples. They are fairly accurate, but they all have the drawback of being expensive and often slow. A commercial laboratory may charge \$50 to \$100 per sample and take two to three days. Samples must be handled with care and usually require refrigeration which may not be readily available in a field setting.

Manja et al, 1982, utilized a simple, low-cost, test for hydrogen sulfide to detect fecal contamination in the piped water supplies of selected Indian cities. Although it is known that most of the coliform indicator bacteria do not produce hydrogen sulfide, they found a high level of correlation between the results of the hydrogen sulfide test and the conventional MPN test for coliforms. Kromoredjo and Fujioka, 1991, further tested the method in Indonesia against the LTB plus MUG, and Colilert tests and concluded that the method was "reliable, inexpensive and especially suited to assess the micro biological quality of drinking water in Indonesia."

Despite these promising findings, the hydrogen sulfide method has not been widely used and until 1992, was not commercially available. In that year, the Zumaque Foundation in Venezuela began to produce test kits, primarily for its own use but also offering them for sale on a limited basis. The kit, which contains a small vial of reagent, four sampling tubes, a quantity of filter paper with scissors for cutting the test strips, a pair of tweezers to prevent contamination from handling, and a vial of ortotolodene to test for residual chlorine, is being sold in Venezuela for

approximately \$15. 100 samples or more can be processed with the original supply of chemicals. The shelf-life is not known but should normally be 6 months or more.

To perform the test it is simply necessary to insert an impregnated paper strip into one of the vials and add water. The vial should be left in a shaded spot, at room temperature for 12 to 18 hours. If during that time the strip turns black the test is considered positive and the sample is presumed to be fecally contaminated. It should be emphasized, however, that the test does not indicate the degree of contamination and its accuracy is not perfect, probably only on the order of 95% .

The test works for both fresh and salt waters. One interesting application was the testing of water samples from 42 popular, ocean beaches on the northern coast of Venezuela by the environmental group FUDENA (Foundation for the Defence of Nature). 43% of the samples were found to be positive.

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- Manja, K. et al. 1983. A simple Field Test for the Detection of Faecal Pollution in Drinking Water, *Bulletin of the World Health Organization*, 60:797-801.
- Zumaque Foundation, P.O. Box 829, Caracas 1010A, Venezuela. Fax (582) 908-3684, Tel. (582) 908-3874.