

A LOW COST PORTABLE WATER TESTING KIT FOR DEVELOPING COUNTRIES

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One of the principal objectives of the UN International Drinking Water Supply and Sanitation Decade is to provide safe water for all by 1990. The success of the Decade in this respect can only be assessed by the widespread inception of routine monitoring programmes to ascertain the microbiological, physical and chemical quality of water supplies. Water quality surveillance has not been undertaken in the great majority of developing countries to date for two main reasons: a lack of trained personnel with adequate financial and administrative support, and the absence of simple, inexpensive monitoring equipment.

Detailed routine surveillance should cost a small fraction of the capital cost of building and maintaining a water supply system for large cities. There is, therefore, no reason why conventional laboratories should not provide the same services in the main cities of developing countries as they do in Europe and North America. In provincial areas, however, there is a vital need for many thousands of small basic laboratories of the type proposed by UNESCO/WHO (1978). These could be based on regional and district medical laboratories which would be capable of various investigations relevant to primary health care including five or six essential water tests.

Many of the problems of water quality monitoring in remote rural areas have been described (Lloyd, 1982). In these circumstances, perhaps several hours travelling time away from provincial centres, routine water surveillance presents the greatest difficulty. It is rarely (if ever) undertaken for technical, logistic and economic reasons. However, such surveillance could be undertaken using dedicated portable water test kits.

Presently, governments around the world are developing national and local infrastructures responsible for water supply and sanitation projects and there will be an increasing demand for appropriate water testing facilities at a provincial and sub-provincial level. However, preliminary investigations have ascertained that commercially available water test kits are precluded from use in the great majority of developing countries because they are expensive, need regular servicing and the importation of chemicals, and require a relatively high level of technical expertise for their effective use.

By combining a variety of conventional technologies with recent developments in reliable electronic instrumentation and careful test selection, the University of Surrey has found it possible to develop a basic kit which will enable reliable routine monitoring of even the most remote rural water supplies to be performed at very low cost. The kit encompasses essential bacteriological, physical and chemical test parameters which permit both assessment of the hygienic status of drinking waters and the monitoring of efficiency of water treatment and purification processes.

The authors present data and experiences from field trials of the prototype water testing kit in South America as well as results from laboratory investigations of the comparative performance of the kit and conventional means of analysis. Further progress on the scale down of analytical equipment and the development of novel instrumentation are described. Recommendations for the efficient use of kits, and the need for in country training programmes for water quality officers are discussed.

REFERENCES

- UNESCO/WHO (1979). Laboratory Services at Primary Health Care. LAB/79.1.
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